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MAORI PATIENTS IN PUBLIC  
HOSPITALS

*Issued by Medical Statistics Branch  
of the Department of Health  
Wellington, New Zealand*



1965





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*Special report series*

# MAORI PATIENTS IN PUBLIC HOSPITALS

by

F. H. FOSTER

Medical Statistics Branch  
Department of Health, Wellington

SPECIAL REPORT No. 25

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The opinions expressed in this report  
are those of the author and do not  
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the Department of Health.

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## I. INTRODUCTION

### 1.1 Scope of report

This report shows that there were big differences in the frequency with which Maoris and Europeans were admitted to public hospitals in 1961. For many diseases, the Maori hospitalization rates were higher than those for Europeans; for some diseases the Maori rates were lower. Considerable use has been made of diagrams to illustrate both the nature and extent of these differences.

It should be emphasised at the outset that figures in this report tell what illness was treated in public hospitals only and should not be equated with the sum total of illness in the community. There are many reasons which may cause a person to decide against hospital care even though there are good medical reasons to the contrary, as evidenced by field workers who have reported cases of illnesses being stoically endured, the sufferers often being unaware that a cure could be effected during a short stay in hospital. Although it is possible that for some diseases the figures in this report are very close to true incidence, such inferences should not be made about the figures in general.

Nor do the figures tell the full extent of hospitalized illness in New Zealand because details about patients in private hospitals are not included. A census of both public and private general hospitals taken in 1961 disclosed that 82.4 per cent of all hospital patients were in public hospitals and 17.6 per cent were in private hospitals. Unfortunately no information was collected in the census about race, so it is not possible to state how much illness in Maoris was treated in private hospitals. It is known, however, that nearly 6 in 10 patients in private hospitals were aged 65 years or over and three diagnoses (cerebrovascular lesions including sequelae, degenerative heart diseases and senility) alone accounted for about a quarter of private hospital patients. These three diagnoses made up only 1.8 per cent of the Maori cases in public hospitals in 1961. It may well be, therefore, that there were relatively few Maoris in private hospitals at the time of the census, but there is no unequivocal evidence to support this contention.

### 1.2 Source of data

Information about every patient discharged from or dying in New Zealand public hospitals is routinely reported to the Medical Statistics Branch on punch cards which are written in the medical records departments of the hospitals. The facts about each patient's stay in hospital are transcribed from the summary in the case-notes to a separate punch card. The information, which consists of personal history data - such as age, sex, race and domicile, and clinical data such as diagnosis, length of stay and operations performed, - is used for both administrative and research purposes. These punch cards were the source documents of this study.

It would, of course, have been both helpful and informative if the data available from the punch cards could have been supplemented with social, economic and environmental data. If this had been an ad hoc study provision could have been made to collect additional material but as information of this kind is not elicited in the normal course of events by medical staff when patients are admitted to hospital it has not been possible to obtain these extra data for this report.

### 1.3 Disease classification

The diagnostic information in this report was classified according to the 1955 Revision of the International Classification of Diseases. The grouping of diseases into 50 titles is not a standard one, but was specially drawn up for this report. The International Classification of Diseases code numbers included in each title have been shown so that if more detail is required about the constituent diseases included under each heading reference can be made to Volume I of the International Classification of Diseases.

#### 1.4 Calculation of rates

The 1961 census figures have been used as the basis for the calculation of rates in this report. The symbol .. has been used in the following tables whenever the rate was less than 0.05 per 10,000 population.

## 2. GENERAL COMMENT

### 2.1 The need for Maori health statistics

In recent years there has been a growing interest in Maori health both on the part of individual researchers concerned with particular diseases, and on the part of national and regional health authorities together with organizations concerned with Maori welfare. The researchers have usually been engaged in furthering their knowledge of particular diseases and the differences in incidence between Maoris and Europeans which they noted were generally incidental to their main purpose. As the findings of these studies became more widely known, other researchers were stimulated to look for different incidence patterns in studies of their own. Gradually it became apparent that in many diseases Maori and European incidence differed considerably. Although health authorities were aware that differences in Maori and European levels of health existed they did not have available comprehensive factual material about the extent or the precise nature of these differences. Such information was of course a prerequisite to the effective planning of health improvement programmes.

To meet this demand for information the Medical Statistics Branch compiled an ever-increasing amount of statistical information about particular diseases or groups of disease but it was not until 1960 when an analysis of death rates was published that the first comprehensive report on one aspect of Maori and European health was available. That report (1) showed that Maoris were affected to an even greater degree than Europeans in many degenerative diseases which occur in late middle life or in old age. The report called for more field studies so that more detailed measurements of disease incidence could be made. In 1962 a report of such a field study was published (2) of the findings of a combined Department of Health and Wellington Hospital team. The team studied a rural Maori community and related nutritional and living standards to levels of health. Other reports of field studies have followed.

Also in 1962 a second report in this series appeared on Maoris in mental hospitals (3). That report showed that hospitalization rates for Maoris were higher than those for Europeans for schizophrenic disorders and mental deficiency but lower for senile psychosis, psychoneurosis and alcoholism. In 1964 a third report in this series analysed Maori and European rates of infant and foetal loss over a forty year period (4).

This present report is then the fourth in the Special Report Series to deal with Maori and European levels of health, dealing as it does with people treated in public hospitals.

### 2.2 Who is a Maori and who is a European?

The information about public hospital patients in this report has been presented according to whether from a statistical point of view the patients were Maoris or Europeans. There are numerous statutory definitions of a "Maori" but the one accepted for census and statistical purposes is "a person belonging to the aboriginal race of New Zealand; and includes a half caste and a person intermediate in blood between half castes and persons of pure descent from that race."

The term "European" in its statistical sense covers all other New Zealand residents who do not qualify as a Maori.

In the 1961 census people were asked to furnish information about their racial origin and the following summary appears in Volume 7, Race, Population Census 1961, the division being into the two groups whose hospital experience is contrasted in this report.

<u>Counted as Maori</u>		<u>Counted as European</u>	
Full Maori	103,987	Full European	2,181,902
Maori-European:-		European - Maori	
Three-quarter caste	24,115	quarter caste	34,984
Half caste	36,371	Polynesian other	
Maori - Other Polynes-		than Maori	14,340
ian	1,607	Chinese	8,524
Maori - Other races	1,006	Indian	4,179
		Syrian, Lebanese, or	
		Arab	1,101
		Other races	2,868
Totals	167,086		2,247,898

Of those counted as Maori 103,987 or 62.2 per cent claimed full Maori ancestry, while a further 24,115 or 14.4 per cent claimed three-quarter Maori ancestry. In the "European" group 97.1 per cent claimed full European ancestry while a further 1.6 per cent stated they were quarter caste Maoris. The remainder were small groups which together constituted little more than one per cent of the "European" total.

As it has been asked why it is thought necessary to question a person about his racial origin, and as the reliability of the material collected has been called into question on this point it is pertinent to examine these topics here. In the first place, it is stated that as one of the main problems facing New Zealanders at present concerns the integration of Maoris and Europeans, factors which tend to promote the unity of the two peoples should be emphasised while those that tend to differentiate the two should not be stressed. It is argued that reports such as this which show differences between the two peoples are divisive. Again, it is said that even if differences in levels of Maori and European health can be demonstrated they reflect social and environmental differences rather than racial differences. The answer to these objections is that it is not disputed that there is some merit in these points of view but it is considered that such merit is out-weighed by the use made of the facts such reports bring to light. If, as in this report, it is shown that some members of the community have a hospitalization rate for tuberculosis which is ten times higher than that for other members of the community and if the method of identifying the members of the community with high hospitalization rates enables health authorities to locate and treat people with that illness more effectively, then it seems that the interests of the community are best served by making the comparison. The crucial point is that efforts should be directed at combatting the disease and its causes not discussing the propriety of definitions.

On the question of reliability, it is sometimes said that after years of intermarriage many people of part Maori ancestry cannot state with any certainty their degree of Maori ancestry. Such people might state that they are Maoris on one occasion and Europeans on another so the conclusions drawn from material based on these responses are necessarily invalid. It is agreed that the degree of Maori ancestry a person may have is often very difficult to estimate. There is a way Maoris themselves refer to the situation by comparing the mixture of Maori and European ancestry with a river flowing into the sea. "If a vessel of water is taken from the river mouth who can assay the contents in terms of salt and fresh?" It is, however, generally held that anyone who is uncertain about the degree of his Maori ancestry makes up his own mind whether he is a Maori or a European and is consistent in his response to the question whether he is filling in a census schedule or being admitted to hospital. It is therefore unlikely that the practice of giving different answers about race is as widespread as some might think. Consequently, it is also very unlikely that the data obtained about race are statistically unreliable.

### 2.3 Readmissions

There is provision on the statistical cards for reporting whether or not a patient is a readmission. The definition of a readmission is a person who comes back into the same or some other public hospital because of the same illness or complication of it. Previous admission to a mental or private hospital therefore is not taken into account when determining whether an admission to a public hospital is a first admission or not. It should be noted that a patient transferred from one public hospital to another is regarded statistically as a readmission in the receiving hospital. For example, if a patient admitted to a district hospital is diagnosed as hydatid disease of lung and is subsequently transferred to a metropolitan hospital for thoracic surgery, the metropolitan hospital will report the case as a readmission even though the patient has not previously been admitted to that hospital at all.

In the definition of readmission the term "same illness" covers complications of the main or underlying disease. This means that repeated admissions for the late effects of injuries or conditions such as asthma, arthritis, diabetes mellitus or cardiovascular disease would after the first admission be reported as readmissions.

The question has been raised "How reliable is information reported about readmissions?" Undoubtedly there will be different standards of accuracy between hospitals and between hospital staff within the same hospital but there are two checks on this information. The first occurs when the medical records officer in the public hospital writes the statistical card and has available the case notes of previous admissions to that hospital. The second check occurs at the Medical Statistics Branch where cases which appear from the clinical and personal history data to have been readmissions but have not been reported as such are referred back to the hospital.

A second question is "As Maoris sometimes use their Maori name and sometimes a European name, how reliable is information about Maori readmissions?" Although it is true that a few Maoris commonly use both Maori and European names it does not follow that two sets of case notes, one for each name, are housed in the hospital medical records system. In the first place, on admission patients are asked whether they have been admitted before to that hospital. For affirmative answers the earlier case notes are located. Also many Maoris are admitted to small district hospitals where the admitting staff know a large number of the local inhabitants and will know most patients by both names if more than one name is used. Again and most importantly, when a patient is admitted for a disease or complication for which he has previously been admitted he will very often again come under the care of the same medical officer who supervised the treatment during his first admission.

If the use of Maori and European names by the same person did have the effect of reducing the number of readmissions that were reported for Maoris and assuming no other factor influenced the number of readmissions reported, the readmission rates for Maoris would be less than those for Europeans. This is not the case. There is in fact little difference at all between Maori and European readmission rates. When the rates for each diagnostic group are compared there is such a degree of consistency between the two that the presence of any such factor may be fairly confidently disregarded.

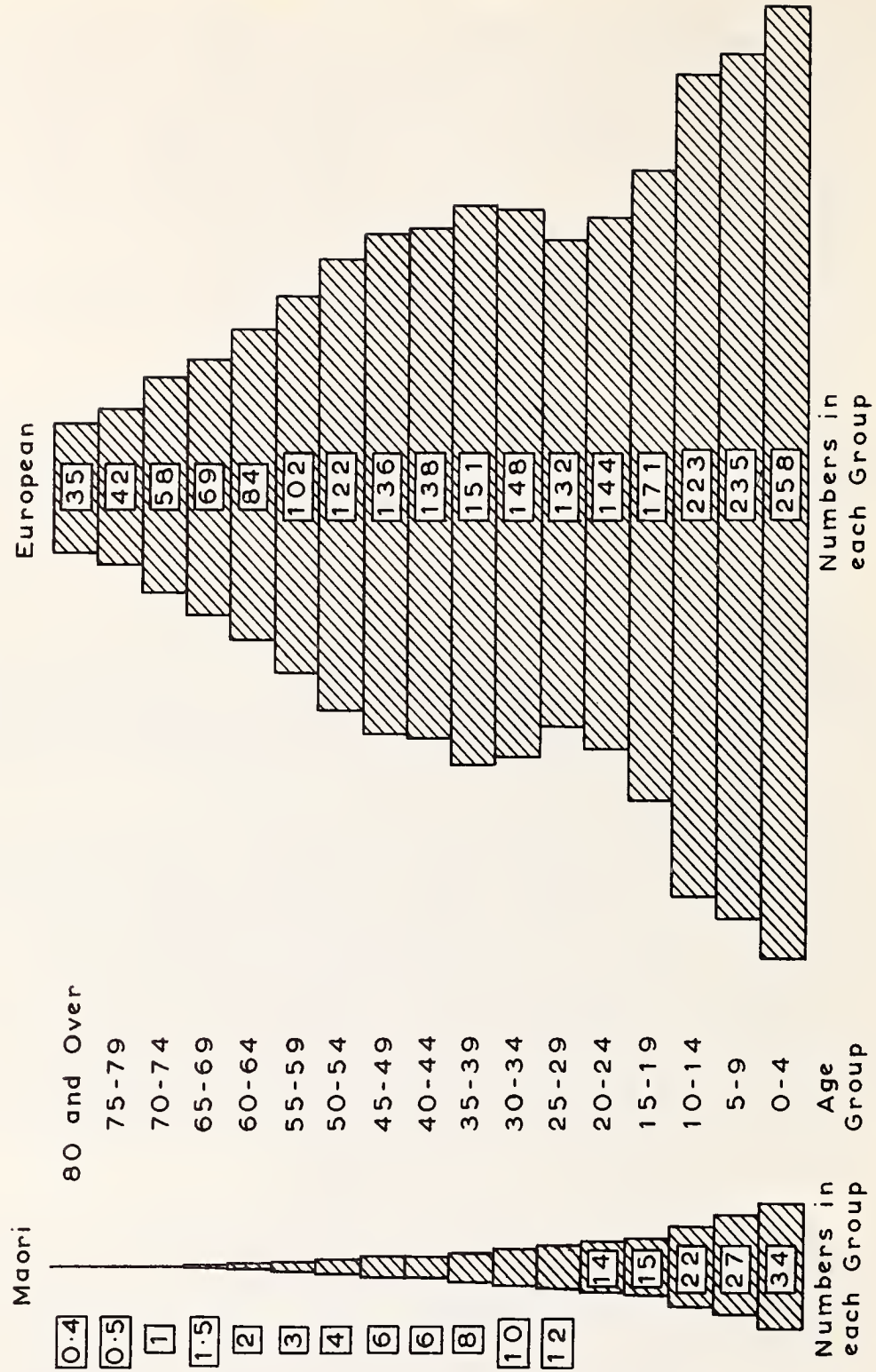
### 2.4 Age-structure of Maori population

Although mention has been made elsewhere of the great differences in age-structure of the Maori and the European populations the effect of these differences on the number of patients entering hospital for the treatment of certain conditions is so great that brief mention of this factor should once again be made. If a more detailed account of the nature and the causes of this disparity is required reference should be made to Special Reports 1 and 8 in this series (1) (3). It suffices to say here that there are proportionately more young and less old people in the Maori than in the European population. The 1961 census showed that nearly half the Maoris (49.2 per cent) were aged under 15 years while only 1.5 per cent were aged 65 years and over. The comparable European figures were 31.9 per cent aged under 15 years and 9.1 per cent aged 65 years and over. The two age pyramids following demonstrate this point very clearly.

FIGURE 1

# AGE STRUCTURE OF MAORI AND EUROPEAN POPULATION 1961 CENSUS

- Thousands -

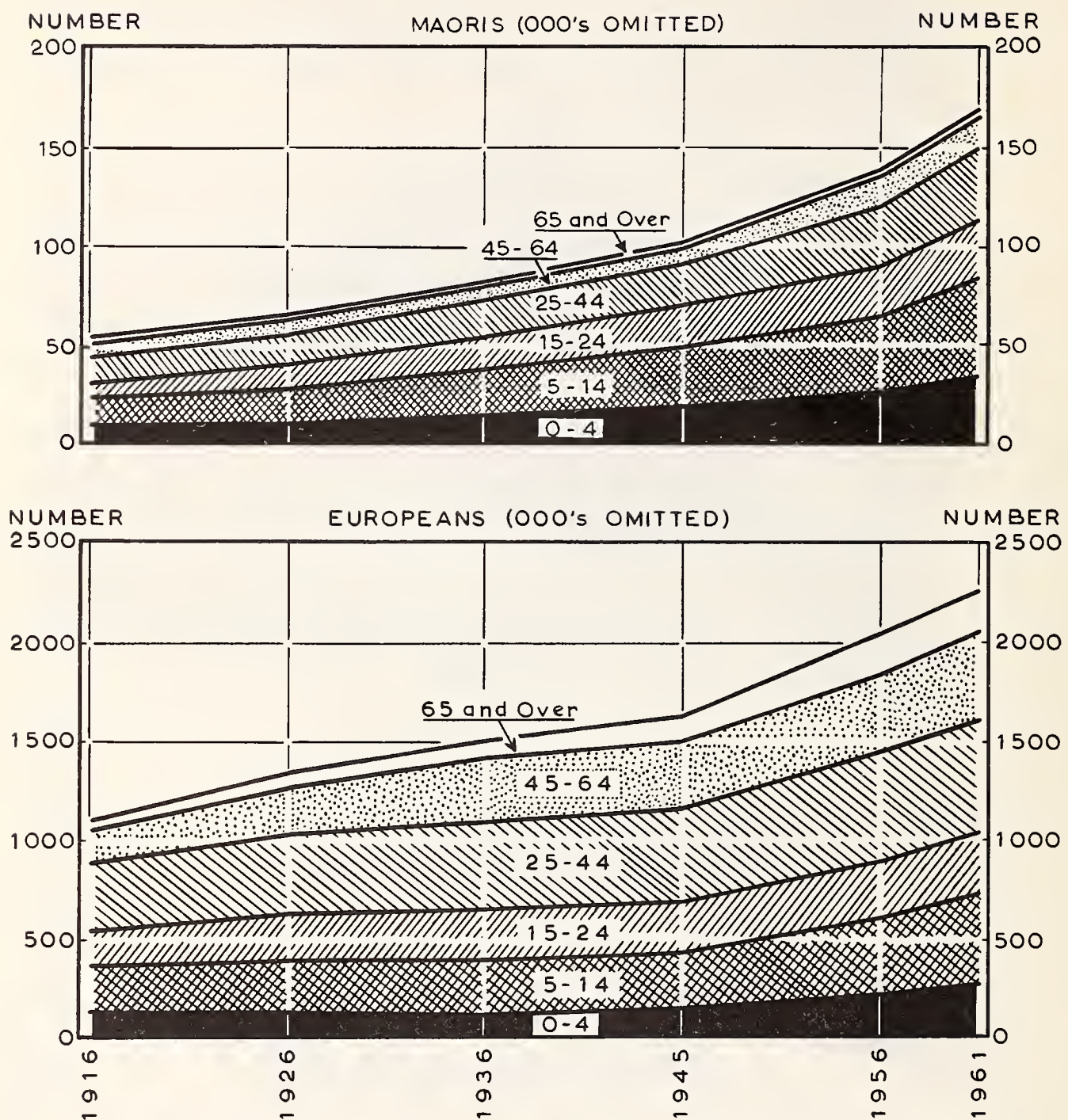


In terms of people treated in hospitals the importance of the differing age-structures is that some diseases might be considered to be rare in Maoris simply because they are usually found in old people and as there are few Maoris old enough to contract the disease the infrequency with which the disease is seen in Maoris is interpreted as meaning that Maoris have some immunity to the disease. Conversely as there are relatively more young Maoris than young Europeans, diseases which commonly appear in children are likely to be seen in a greater percentage of Maori than European patients not necessarily because Maori children are more prone to such diseases but because proportionately more Maoris are of those ages where the disease is to be seen.

The relatively small numbers of Maoris in the older age-groups is well illustrated in the following figure which shows for both Maoris and Europeans, the number of people in each of the six age-groups used in this report, at ten-yearly points, between 1916 and 1956 and for 1961. For Maoris, it is clear that there has been little difference in the number of people aged 65 years and over during the entire period of 45 years. The 45-64 years age-group has approximately doubled during this time, but mainly in the last fifteen years, while there has been a threefold increase in people aged between 5 and 44 years. The largest increase of all has been for ages under 5 years where the 1961 total was over four times higher than that in 1916.

For Europeans a very different picture emerges. The age-groups below 15 years have doubled during the 45 years, while for ages 15 to 44 years the increase has been at an even lower level. The big changes in the European population have been for ages 45 to 64 years where the increase has been in the order of 150 per cent and for ages 65 years and over, where a fourfold increase has occurred.

It is apparent that the number of older people in the Maori population is beginning to grow. In the next two decades the number of Maoris in the 45 to 64 years group will continue to grow quickly, but a similar growth cannot be expected in the 65 years and over group until the late 1980's. The implications of this are important in planning hospital services in the future.



## 2.5 Method of standardizing hospitalization rates

Mention has been made above of the differences in age-structure of the Maori and European populations. Because of these differences crude rates as measures of relative frequency of hospitalization are often completely misleading. To give an illustration of this let us look at the figures for diseases of the thyroid gland which are shown later in this report.

There were 54 Maori cases out of a population of 167,086 giving a crude rate of 3.2 Maori patients per ten thousand Maori population. For Europeans there were 766 cases out of a population of 2,247,898 giving a crude rate of 3.4 European patients per ten thousand European population. On the basis of crude rates it would appear that there was very little difference at all between Maori and European hospitalization rates. Thyroid disease patients however are most commonly aged between 25 and 64 years. Indeed in New Zealand in 1961 90.7 per cent of the Maori patients and 75.7 per cent of European patients were in this age-group. In the New Zealand population for the same year 31.5 per cent of Maoris and 45.0 per cent of Europeans were also in this age-group. This means that for Maoris 90.7 per cent of the thyroid disease cases came from 31.5 per cent of the population, while for Europeans 75.7 per cent of the thyroid disease cases came from 45.0 per cent of the population. Clearly then, when the number of patients in this age-group is related to the total number of people in the population who also are in this age-group a more reliable measure than a crude rate results. The age-specific rate (as such a rate is known) for Maori thyroid disease patients aged between 25 and 64 years was 9.3 per ten thousand while that for European thyroid disease patients of the same ages was 5.7 per ten thousand. It is obvious then that unless a method can be adopted to compensate for differences in age-structure, crude rates of different values might mistakenly be interpreted as representing true differences in hospitalization rates when in fact they merely reflect differences in the age-structure of the two populations. Similarly crude rates which are about the same for Maoris and Europeans might in fact mask real differences which would only appear if allowances were made for age.

The age-adjusted hospitalization rate used here was computed in the following way. The age-specific rates for Maoris and Europeans were first calculated. Each age-specific rate for Maoris was related to the European population of the same age so that the number of Maoris one would expect to have been admitted can be estimated if the Maori and European populations had been alike in size. The sum of these expected values was then expressed as a percentage of the actual or observed number of European cases. In the calculations for thyroid disease the expected number of Maori cases was 1,071 which was 40 per cent higher than the observed number of European cases. In other words the acceptance at face value of crude rates would have lead to the erroneous conclusion that there was little difference in the European and Maori rates whereas in fact hospitalization for thyroid disease was 40 per cent more common in Maoris.

## 2.6 Age-structure of Maori patients

In 1961 there were 186,504 discharges and deaths from public hospitals. Of these 18,784 or 10.1 per cent were Maoris and 167,720 or 89.9 per cent were Europeans. Comparing these figures with the numbers of Maoris and Europeans in the total population, in every one thousand Maoris there were 112.4 discharges and deaths and in every thousand Europeans there were 74.6 discharges and deaths. In terms of simple proportions, but making no allowances for the fact that some of these cases would be readmissions and some first admissions, this means that there was one Maori case for every nine Maoris in the total population and one European case for every 13 Europeans in the total population. On the basis of these figures then it appears that proportionate to total population there were 50 per cent more Maori cases than European cases in public hospitals in 1961.

The salient feature of differences in age distribution between Maori and European cases is that the Maori rates were markedly higher for all ages. The pattern is that the differences between the Maori and European rates were greatest in the early and late years of life.

It is convenient to look at these differences in six age groups: pre-school children (0-4 years), school children (5-14 years), adolescence and early working years (15-24 years), middle working years (25-44 years), late working years (45-64 years) and retirement (65 years and over). The numbers and rates per 1,000 population are shown below for these groups.

### 2.6.1 Pre-school children

There were 4,966 Maori cases and 18,223 European cases aged under five years. The rates were 147.6 per thousand population for Maoris and 70.5 per thousand population for Europeans. In terms of simple ratios there was one Maori case for every seven Maori pre-school children and one European case for every 14 European pre-school children in the community. The hospitalization rate was therefore over twice as high for pre-school Maoris as for pre-school Europeans. For both Maoris and Europeans the numbers and rates for boys were higher than those for girls.

### 2.6.2 School children

The number of cases was 3,604 for Maoris and 22,122 for Europeans. This group had the lowest hospitalization rates of any group. For Maoris the rate was 74.1 per thousand population and for Europeans it was 48.3 per thousand population. The ratios were one Maori case for every 13 Maori school children and one European case for every 21 European school children. The Maori rate was 53 per cent higher than that for Europeans. As with the pre-school group for both Maoris and Europeans, the numbers and rates for boys were higher than those for girls.

### 2.6.3 Adolescence and early working years

There were 3,502 Maori cases and 24,235 European cases. The hospitalization rates were 117.9 per thousand population for Maoris and 77.0 per thousand population for Europeans. The ratios were one Maori case for every eight Maoris in this age-group compared with one European case for every thirteen Europeans in this age-group. The Maori rate was 53 per cent higher than that for Europeans. The numbers and rates for females were higher than those for males in both Maoris and Europeans.

### 2.6.4 Middle working years

Maori cases numbered 4,002 and European cases 37,712. The rates were 109.5 per thousand population for Maoris and 66.4 per thousand population for Europeans. The ratio was one Maori case in every nine Maoris aged between 25-44 years and one European case in every 15 Europeans aged between 25-44 years. The Maori rate was 65 per cent higher than the European rate.

#### 2.6.5 Late working years

The number of Maori cases was 2,015 and the rate was 125.3 per thousand population, whereas the number of European cases was 34,483 and the rate was 77.8 per thousand population. The ratio was one Maori case to every eight Maoris in the late working years and one European case to every 13 Europeans in the late working years. As was the case in the adolescent and early working years group the rates for females were higher than those for males in both Maoris and Europeans.

#### 2.6.6 Retirement

The number of Maori cases was 695 and European cases 30,945. The rates were 276.9 per thousand population for Maoris and 150.7 per thousand population for Europeans. The ratio of cases was one Maori for every four Maoris in this age-group and one European case for every seven Europeans in this age-group. The Maori rate was 84 per cent higher than the European rate. The rates for males were higher than those for females for Maoris and Europeans. Indeed for Maoris the rate for males was more than twice that for females.

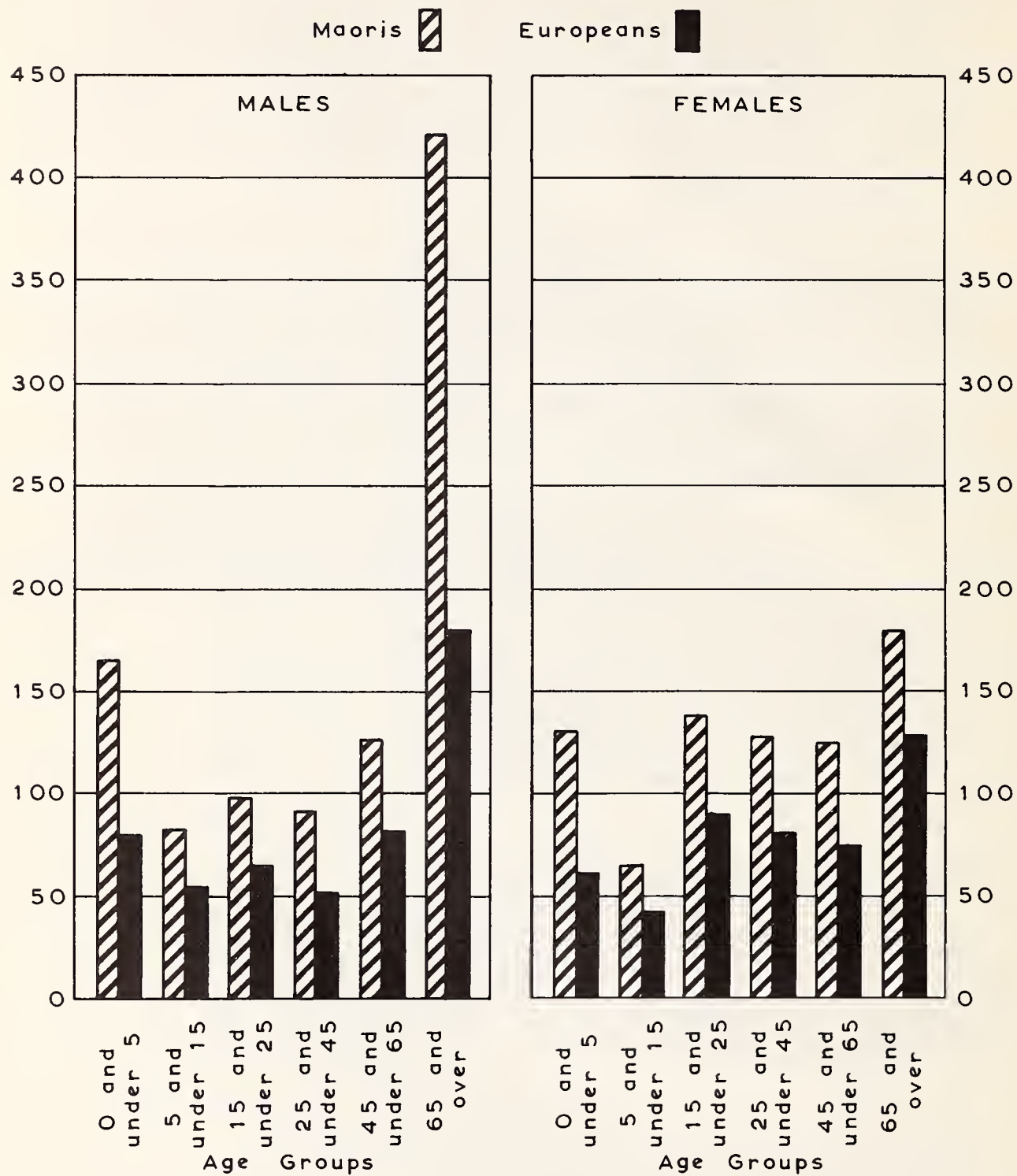
#### 2.6.7 Summary

The hospitalization rates for Maoris and Europeans are shown in the accompanying figure. The Maori rates are shown to be higher for all six age-groups, the greatest difference being in the pre-school and retirement groups.

FIGURE 3

## MAORI AND EUROPEAN HOSPITALIZATION 1961

BY SEX AND AGE GROUPS  
 - RATES PER 1,000 OF POPULATION -



### 3. CAUSES OF ADMISSION AND BED OCCUPANCY

#### 3.1 What were the leading causes of admission for Maoris?

The fifteen leading causes are listed below. Together they accounted for six out of every ten cases admitted.

<u>Ranking number</u>	<u>Cause</u>	<u>Number of cases</u>	<u>Percentage of total</u>
1	Pneumonia	1,846	9.8
2	Fractures	1,002	5.3
3	Diseases of skin and cellular tissue	969	5.2
4	Symptoms and ill-defined con- ditions	893	4.8
5	Open wounds	756	4.0
6	Tuberculosis	723	3.8
7	Diseases of breast and female genital organs	670	3.6
8	Bronchitis	661	3.5
9	Appendicitis	610	3.2
10	Infective and parasitic diseases except tuberculosis	604	3.2
11	Diseases of intestines and peritoneum	583	3.1
12	Head injury	544	2.9
13	Osteomyelitis and other diseases of musculoskeletal system	485	2.6
14	Abortion	459	2.4
15	Hernia	393	2.1

Any such list is to some extent an arbitrary arrangement in that the relative positions of the causes of admission depend on the method of selection. For instance, if in the above list fractures, open wounds and head injury were added together and called "Certain injuries" they would have been the leading cause. Clearly a balance must be struck between specificity and generality.

With this proviso in mind, pneumonia was the leading cause. One in every ten Maoris admitted was assigned to this heading. Indeed, as practically half these pneumonia cases were aged under two years it can be seen that there were nearly as many Maori infants admitted with pneumonia as there were Maoris of all ages admitted for any other single cause.

Other leading causes with a large proportion of their cases coming from the under five years age-group were diseases of skin and cellular tissue, bronchitis, infective and parasitic diseases except tuberculosis, diseases of intestines and peritoneum (principally gastro-enteritis) and hernia. The age-group 5 to 14 years made the greatest contribution to the number of osteomyelitis and other diseases of musculoskeletal system, fractures and open wounds cases, while people aged 15 years and over made up the bulk of patients admitted for the other leading causes.

### 3.2 Differences in Maori and European causes of admission

In a later section of this report, the age-adjusted hospitalization rates for Maoris are shown according to a classification of 50 disease groups. These rates which are summarized below have been grouped together according to size of the difference between the European hospitalization rate and the age-adjusted Maori hospitalization rate.

#### Maori age-adjusted rate ten times higher:

Tuberculosis, all forms.

#### Maori age-adjusted rate six times higher:

Rheumatic fever and chronic rheumatic heart disease.

#### Maori age-adjusted rate five times higher:

Pneumonia.

#### Maori age-adjusted rate three times higher:

Avitaminoses and other metabolic and endocrine gland diseases.

Hypertensive and other heart disease.

Bronchitis.

Other diseases of respiratory system.

#### Maori age-adjusted rate twice as high:

Other infective and parasitic diseases.

Diabetes mellitus.

Diseases of intestines and peritoneum.

Diseases of skin and cellular tissue.

Open wounds.

Burns.

Other injuries and adverse reactions.

#### Maori age-adjusted rate 50 per cent higher:

Allergic disorders.

Diseases of eye.

Diseases of ear.

Nephritis, nephrosis and other diseases of urinary system.

Delivery and complications of puerperium.

Symptoms, senility and ill-defined conditions.

Fractures.

Special admissions and examinations without sickness.

#### Maori age-adjusted rate less than 50 per cent higher:

Malignant neoplasms.

Diseases of thyroid gland.

Vascular lesions affecting central nervous system.

Inflammatory and other diseases of central nervous system, nerves and peripheral ganglia.

Diseases of veins and other diseases of circulatory system.

Acute upper respiratory infections and influenza.

Diseases of buccal cavity and oesophagus.

Appendicitis.

Hernia of abdominal cavity.

Diseases of liver, gallbladder and pancreas.

Diseases of male genital organs.

Diseases of breast and female genital organs.

Complications of pregnancy.  
 Abortion.  
 Arthritis and rheumatism.  
 Osteomyelitis and other diseases of musculoskeletal system.  
 Head injury (excluding skull fracture).  
 Effects of poisons.

Maori age-adjusted rate less than 50 per cent lower:

Benign and unspecified neoplasm.  
 Diseases of blood and blood-forming organs.  
 Psychoses.  
 Psychoneurotic, character, behaviour and intelligence disorders.  
 Arteriosclerotic and degenerative heart disease.  
 Diseases of stomach and duodenum.  
 Congenital malformations.  
 Certain diseases of early infancy.

Maori age-adjusted rate more than 50 per cent lower:

Diseases of arteries.  
 Hypertrophy of tonsils and adenoids.

These differences are shown diagrammatically below, not in order of size of difference but in the order of the International Classification of Diseases code numbers. For the sake of convenience the rates have been rounded off to the nearest whole number. In addition, differences are shown for nine groups of accidents, poisonings and violence.

FIGURE 4      CAUSES OF ADMISSION - HOSPITALIZATION RATES PER  
10,000 POPULATION

Notes: Maori rates have been adjusted for age.  
 Figures have been rounded to nearest whole number.  
 Each x represents one case per 10,000 population.

<u>I.C.D.</u> <u>Nos.</u>	<u>Diagnostic group</u>		<u>Rates</u>
001-019	Tuberculosis - all forms	Maori (63)	XXXXXXXXXXXXXXXXXXXXX
		European (6)	XX XX
020-138	Other infective and parasitic diseases	Maori (33)	XXXXXXXXXXXXX
		European (13)	XXXXX XXX
140-205	Malignant neoplasms	Maori (41)	XXXXXXXXXXXXXXXXXX
		European (39)	XXXXXXXXXXXXXXXXX
210-239	Benign and unspecified neoplasms	Maori (16)	XXXXXX
		European (17)	XXXXXX

240-245	Allergic disorders	Maori	(10)	XXXXX XXXX
		European	(6)	XX XX
250-254	Diseases of thyroid gland	Maori	(5)	XX X
		European	(3)	X X
260	Diabetes mellitus	Maori	(21)	XXXXXXXXX XXXXXXXXX
		European	(8)	XXX XX
270-289	Avitaminoses, and other metabolic and endocrine gland	Maori	(10)	XXXXX XXXX
		European	(3)	X X
290-299	Diseases of blood and blood-forming organs	Maori	(3)	X X
		European	(4)	XX X
300-309	Psychoses	Maori	(5)	XX X
		European	(7)	XXX XX
310-326	Psychoneurotic, character, behaviour and intelligence disorders	Maori	(7)	XXX XX
		European	(11)	XXXX XXXX
330-334	Vascular lesions affecting central nervous system	Maori	(22)	XXXXXXXXX XXXXXXXXX
		European	(15)	XXXXX XXXXX
340-369	Inflammatory and other diseases of central nervous system, nerves and peripheral ganglia	Maori	(17)	XXXXXX XXXXXX
		European	(12)	XXXX XXXX
370-389	Diseases of eye	Maori	(30)	XXXXXXXXXX XXXXXXXXXX
		European	(16)	XXXXXX XXXXXX
390-398	Diseases of ear and mastoid process	Maori	(12)	XXXX XXXX
		European	(6)	XX XX
400-416	Rheumatic fever and chronic rheumatic heart disease	Maori	(20)	XXXXXXXX XXXXXXXX
		European	(3)	X X
420-422	Arteriosclerotic and degenerative heart disease	Maori	(20)	XXXXXXXX XXXXXXXX
		European	(22)	XXXXXXXXX XXXXXXXXX

430-447	Hypertensive and other heart disease	Maori	(49)	XXXXXXXXXXXXXXXXXXXXX
		European	(14)	XXXXXX
450-456	Diseases of arteries	Maori	(2)	X
		European	(5)	XX
460-468	Diseases of veins and other diseases of circulatory system	Maori	(29)	XXXXXXXXXX
		European	(21)	XXXXXXXXXX
470-483	Acute upper respiratory infections and influenza	Maori	(11)	XXXX
		European	(9)	XXX
490-493	Pneumonia	Maori	(98)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
		European	(17)	XXXXXX
500-502	Bronchitis	Maori	(39)	XXXXXXXXXXXXXXXXXX
		European	(12)	XXXX
510	Hypertrophy of tonsils and adenoids	Maori	(14)	XXXXX
		European	(35)	XXXXXXXXXXXXX
511-527	Other diseases of respiratory system	Maori	(36)	XXXXXXXXXXXXX
		European	(11)	XXXX
530-539	Diseases of buccal cavity and oesophagus	Maori	(11)	XXXX
		European	(8)	XXX
540-545	Diseases of stomach and duodenum	Maori	(10)	XXXX
		European	(11)	XXXX
550-553	Appendicitis	Maori	(34)	XXXXXXXXXXXXX
		European	(25)	XXXXXXXXXX
560-561	Hernia of abdominal cavity	Maori	(25)	XXXXXXXXXX
		European	(20)	XXXXXXXX
570-578	Other diseases of intestines and peritoneum	Maori	(37)	XXXXXXXXXXXXX
		European	(18)	XXXXXX

580-587	Diseases of liver, gall-bladder and pancreas	Maori (13)	XXXXXX XXXXX
		European (14)	XXXXXX XXXXX
590-609	Nephritis, nephrosis and other diseases of urinary system	Maori (24)	XXXXXXXXXX XXXXXXXXXX
		European (14)	XXXXXX XXXXX
610-617	Diseases of male genital organs	Maori (22)	XXXXXXXXXX XXXXXXXXX
		European (22)	XXXXXXXXXX XXXXXXXXX
620-637	Diseases of breast and female genital organs	Maori (47)	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
		European (35)	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXX
640-648	Complications of pregnancy	Maori (35)	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXX
		European (25)	XXXXXXXXXX XXXXXXXXX
650-652	Abortion	Maori (55)	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
		European (41)	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXX
660-689	Delivery and complications of puerperium	Maori (34)	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXX
		European (18)	XXXXXX XXXXX
690-716	Diseases of skin and cellular tissue	Maori (49)	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
		European (20)	XXXXXX XXXXX
720-727	Arthritis and rheumatism	Maori (13)	XXXXX XXXXX
		European (10)	XXXX XXX
730-749	Osteomyelitis and other diseases of musculo-skeletal system	Maori (25)	XXXXXXXXXX XXXXXXXXXX
		European (24)	XXXXXXXXXX XXXXXXXXXX
750-759	Congenital malformations	Maori (9)	XXX XXX
		European (12)	XXXX XXXX
760-776	Certain diseases of early infancy	Maori (7)	XXX XX
		European (7)	XXX XX
780-795	Symptoms, senility and ill-defined conditions	Maori (68)	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX
		European (45)	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXX

N800-N829	Fractures	Maori	(61)	XXXXXXXXXXXXXXXXXXXXX
		European	(40)	XXXXXXXXXXXXXXXXXXXXX
N850-N856	Head injury (excluding skull fracture)	Maori	(31)	XXXXXXXXXXXXX
		European	(20)	XXXXXXXXXX
N870-N908	Open wounds	Maori	(40)	XXXXXXXXXXXXXXXXXXXXX
		European	(18)	XXXXXXXXXX
N940-N949	Burns	Maori	(13)	XXXXXX
		European	( 7)	XXX
N960-N979	Effects of poisons	Maori	( 9)	XXX
		European	( 8)	XXX
-	Other injuries and adverse reactions	Maori	(39)	XXXXXXXXXXXXXXXXXXXXX
		European	(19)	XXXXXXXXXX
Y00-Y18	Special admissions and examinations without sickness	Maori	(14)	XXXXXX
		European	( 7)	XXX

Causes of accidents, poisonings and violence

E810-E835	Motor vehicle accidents	Maori	(41)	XXXXXXXXXXXXXXXXXXXXX
		European	(22)	XXXXXXXXXX
E800-E802) E840-E866)	Other transport accidents	Maori	(14)	XXXXXX
		European	( 7)	XXX
E870-E895	Accidental poisoning	Maori	( 7)	XXX
		European	( 6)	XX
E900-E904	Accidental falls	Maori	(41)	XXXXXXXXXXXXXXXXXXXXX
		European	(31)	XXXXXXXXXXXXX

E910-E936	Other accidents	Maori	(83)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
		European	(39)	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX
E940-E959	Complications of prophylactic and therapeutic procedures	Maori	( 8)	XXX XX
		European	( 7)	XXX XX
E960-E965	Late effect of injury and poisoning	Maori	( 3)	X X
		European	( 2)	X
E970-E979	Suicide and self- inflicted injury	Maori	( 2)	X
		European	( 2)	X
E980-E985	Assault and injury purposely inflicted by other persons	Maori	( 4)	XX X
		European	( 1)	x

### 3.3 What were the leading causes of bed occupancy for Maoris?

The proviso included in the note above on the selection of leading causes of admission applies also here. The fifteen leading causes of bed occupancy are listed below. Together they accounted for seventy per cent of the total stay in public hospitals of Maoris in 1961.

<u>Ranking number</u>	<u>Cause</u>	<u>Total stay in days</u>	<u>Percentage of total</u>
1	Tuberculosis	67,559	18.6
2	Pneumonia	29,815	8.2
3	Rheumatic fever and chronic rheumatic heart disease	23,003	6.3
4	Osteomyelitis and other diseases of musculoskeletal system	19,043	5.2
5	Fractures	18,092	5.0
6	Diseases of skin and cellular tissue	16,110	4.4
7	Infective and parasitic diseases except tuberculosis	15,846	4.4
8	Other diseases of respiratory system	10,025	2.8
9	Bronchitis	9,825	2.7
10	Open wounds	8,622	2.4
11	Symptoms and ill-defined conditions	8,561	2.4
12	Hypertensive and other heart disease	7,630	2.1
13	Diseases of intestines and peritoneum	7,496	2.1
14	Burns	6,954	1.9
15	Appendicitis	6,816	1.9

The principal cause by far was tuberculosis which alone accounted for 18.6 per cent of the total time spent by Maoris in public hospitals. This is equivalent to saying that every sixth public hospital bed occupied by a Maori had a tuberculosis patient in it.

The diagnosis of pneumonia, to which more admissions were assigned than to any other, ranked second in aggregate stay. In third place were cases of rheumatic fever and chronic rheumatic heart disease which, although making up 6.3 per cent of total stay, totalled only 2.1 per cent of admissions. The two principal constituents of the fourth leading cause, were osteomyelitis with 7,380 days and clubfoot, with 6,261 days. In the sixth cause, diseases of skin and cellular tissue, abscess and cellulitis, totalled 7,001 days. Among the main contributors to the seventh cause, infective and parasitic diseases except tuberculosis, were acute poliomyelitis 3,798 days, infectious hepatitis 1,732 days, and hydatid disease 1,520 days. In the remaining causes two other diseases are worth mentioning for the large contribution they made in their groups; bronchiectasis with 6,079 days in the eighth leading cause and gastro-enteritis with 4,232 days in the thirteenth leading cause.

### 3.4 Differences in Maori and European bed occupancy

A convenient way of illustrating the different patterns of Maori and European bed occupancy is to calculate the number of beds that would be occupied by patients with different types of disease or injury in two hypothetical 100 bed hospitals. This is simply done by computing the total number of days spent in hospital by Maoris and by Europeans for the main diagnostic groups and expressing these figures as percentages.

On the basis of 1961 public hospital cases, in every 100 beds occupied by Maoris, 23 or nearly a quarter would be infective and parasitic disease cases (including 19 tuberculosis cases), 14 would be respiratory disease cases (including eight pneumonia cases), 12 would be patients injured in accidents, and 11 would be circulatory disease cases (including six rheumatic fever and chronic rheumatic heart disease cases). There would be six beds each occupied by patients with diseases of nervous system and sense organs, with diseases of digestive system and with diseases of the organs of movement including osteomyelitis. Four beds would be occupied by skin disease cases, three each by neoplasm and genito-urinary cases and two by symptoms. All other cases would be accommodated statistically, in the remaining 10 beds, that is allergic, endocrine system, metabolic and nutritional diseases; diseases of blood and blood-forming organs; mental, psychoneurotic and personality disorders; deliveries and complications of pregnancy, childbirth and the puerperium; congenital malformations; certain diseases of early infancy; and special admissions and examinations without sickness.

For every 100 beds occupied by Europeans, 14 would be circulatory disease cases, 12 would be nervous system and sense organ cases, 11 would be accident cases, and 9 would be digestive system cases. There would be 8 beds each for neoplasms, for diseases of organs of movement including osteomyelitis, and for symptoms and senility. For infective and parasitic diseases and for diseases of respiratory system there would be six beds each, five beds for genito-urinary cases and two for skin cases. The remaining 11 beds would cater for all other cases.

The biggest difference was quite obviously for infective and parasitic diseases - 23 Maori beds as against 6 European beds. Other groups in which Maori bed occupancy was at least twice as high as European bed occupancy were diseases of respiratory system and diseases of skin. For diseases of circulatory system and accidental injury similar patterns were shown but for the other main diagnostic groups European bed occupancy was higher. In neoplasms and diseases of nervous system and sense organs European bed occupancy was twice as high as that for Maoris while in symptoms, senility and ill-defined conditions it was four times higher than that for Maoris.

This information is illustrated in Figure 5.

FIGURE 5      BED OCCUPANCY

Each \* represents one per cent of the total time spent by Maoris and Europeans in public hospitals in 1961.

<u>Diagnostic group</u>		<u>Maoris</u>	<u>Europeans</u>
Infective and parasitic diseases (including tuberculosis)	(23)	* * * * * * * * * * * * * * * * * * * *	* * * * * * (6)
Neoplasms	(3)	* * *	* * * * * (8) * * *
Diseases of nervous system and sense organs	(6)	* * * * * *	* * * * * * * * * * (12) * *
Diseases of circulatory system	(11)	* * * * * * * * * * *	* * * * * * * * * * (14) * * * *
Diseases of respiratory system	(14)	* * * * * * * * * * * * * *	* * * * * * (6)
Diseases of digestive system	(6)	* * * * * *	* * * * * * * * * * (9)
Diseases of genito-urinary system	(3)	* * *	* * * * * (5)
Diseases of skin and cellular tissue	(4)	* * * *	* * (2)
Diseases of bones and organs of movement	(6)	* * * * * *	* * * * * * * * (8)
Symptoms, senility and ill- defined conditions	(2)	* *	* * * * * (8) * * *
Injuries and adverse reactions	(12)	* * * * * * * * * * * *	* * * * * * * * * * (11) *
All other conditions	(10)	* * * * * * * * * *	* * * * * * * * * * (11) *

#### 4. REGIONAL DIFFERENCES

##### 4.1 Regional distribution of Maori cases

Information about domicile, which was available on the statistical cards for all Maori cases, was used to select the hospital board district in which each case usually lived. The number living in each hospital board district varied considerably and ranged from 3,483 in Waikato Hospital Board district to none at all in Vincent Hospital Board district. It was therefore necessary to group some of the smaller districts together and to amalgamate others with larger adjacent districts. The ten regions which were drawn up and the constituent hospital board districts are shown below together with the number of cases in each region.

Northland	- Northland Hospital Board	2,795 cases
Auckland	- Auckland Hospital Board	2,011 cases
Waikato	- Waikato and Thames Hospital Boards	3,821 cases
Bay of Plenty	- Tauranga, Bay of Plenty and Opotiki Hospital Boards	2,252 cases
East Cape	- Waiapu, Cook, and Wairoa Hospital Boards	2,669 cases
Hawke's Bay	- Hawke's Bay, Waipawa, Dannevirke and Wairarapa Hospital Boards	1,553 cases
Taranaki	- Taranaki, Stratford, Hawera and Patea Hospital Boards	813 cases
Wanganui	- Wanganui, Taumarunui and Palmerston North Hospital Boards	1,629 cases
Wellington	- Wellington Hospital Board	736 cases
South Island	- All South Island Hospital Boards	506 cases.

The region with most cases was Waikato with 3,821 cases or 20.3 per cent of the total cases. The South Island region with 506 cases or 2.7 per cent of the total had fewest cases, and these were located principally in two hospital board districts, North Canterbury (139 cases) and Southland (107 cases). The number of cases in Wellington was not very large but together with Auckland this region gives a good indication of the hospitalization pattern of urbanized Maoris so for this reason it was decided not to amalgamate the Wellington figures with those from an adjacent area.

##### 4.2 Regional distribution of Maori population

The 1961 census figures have been used to ascertain the number of Maoris living in each of the ten regions mentioned above. The population of each region together with the number of cases in hospital and the rate per ten thousand population are shown below:-

<u>Region</u>	<u>Population</u>	<u>Cases</u>	<u>Rate</u>
Northland	21,625	2,795	1,292
Auckland	25,228	2,011	797
Waikato	37,162	3,821	1,028
Bay of Plenty	18,728	2,252	1,202
East Cape	18,857	2,669	1,415
Hawke's Bay	10,442	1,553	1,487
Taranaki	6,347	813	1,281
Wanganui	15,091	1,629	1,079
Wellington	6,322	736	1,164
South Island	7,132	506	709
New Zealand	166,933*	18,785	1,125

\*Does not include 153 Maoris shipboard or on extra-county islands at time of census.

The region with the highest rate was Hawke's Bay with 1,487 cases hospitalised per ten thousand population. This was 32 per cent above the New Zealand average. East Cape region had the second highest rate with 1,415 cases per ten thousand population or 26 per cent above the New Zealand average.

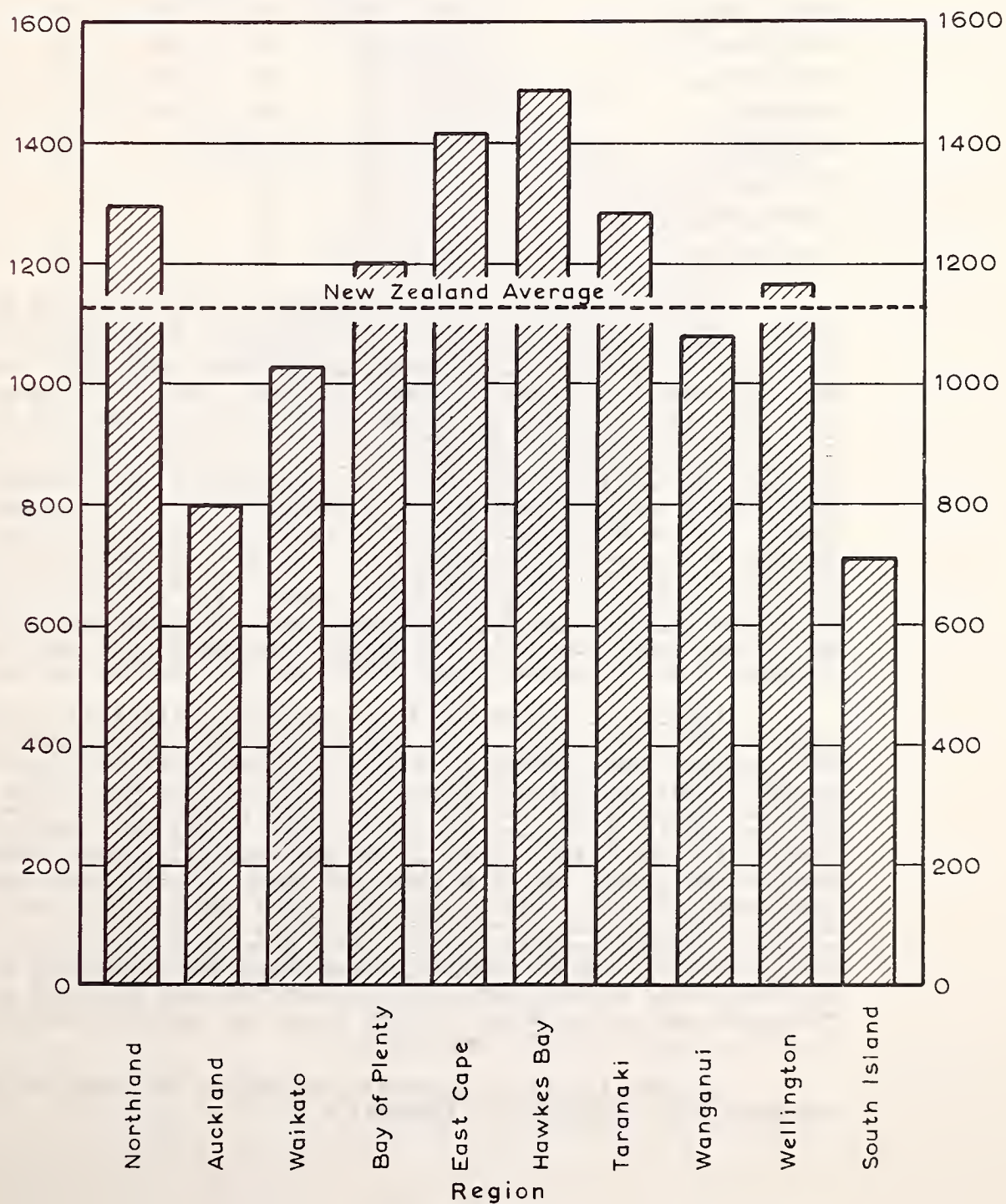
The rates of hospitalized cases per ten thousand population and the percentage above or below the New Zealand average for the other regions were -

Northland	1,292 or 15 per cent above
Taranaki	1,281 or 14 per cent above
Bay of Plenty	1,202 or 7 per cent above
Wellington	1,164 or 3 per cent above
Wanganui	1,079 or 4 per cent below
Waikato	1,028 or 9 per cent below
Auckland	797 or 41 per cent below
South Island	709 or 59 per cent below.

FIGURE 6

## REGIONAL HOSPITALIZATION FOR MAORIS 1961

- RATES PER 10,000 OF POPULATION -



In terms of a straightout comparison then there were great differences between regions varying from Hawke's Bay region at 32 per cent above the New Zealand average to South Island region with 59 per cent below. Before these figures are accepted as a valid indication of differences in hospitalization rates some thought should be given to the extent to which differences in regions were caused by differences in the age-structure of the population within each region. For instance, the age-groups with the highest hospitalization rates were those under 5 years of age, and 65 years and over. If in a particular region there was a disproportionate number of very young and very old residents - say because many people in the middle years had left the region to seek work elsewhere-then a high hospitalization rate might be due primarily to this fact alone.

The percentage of residents in each age group in each region is shown below.

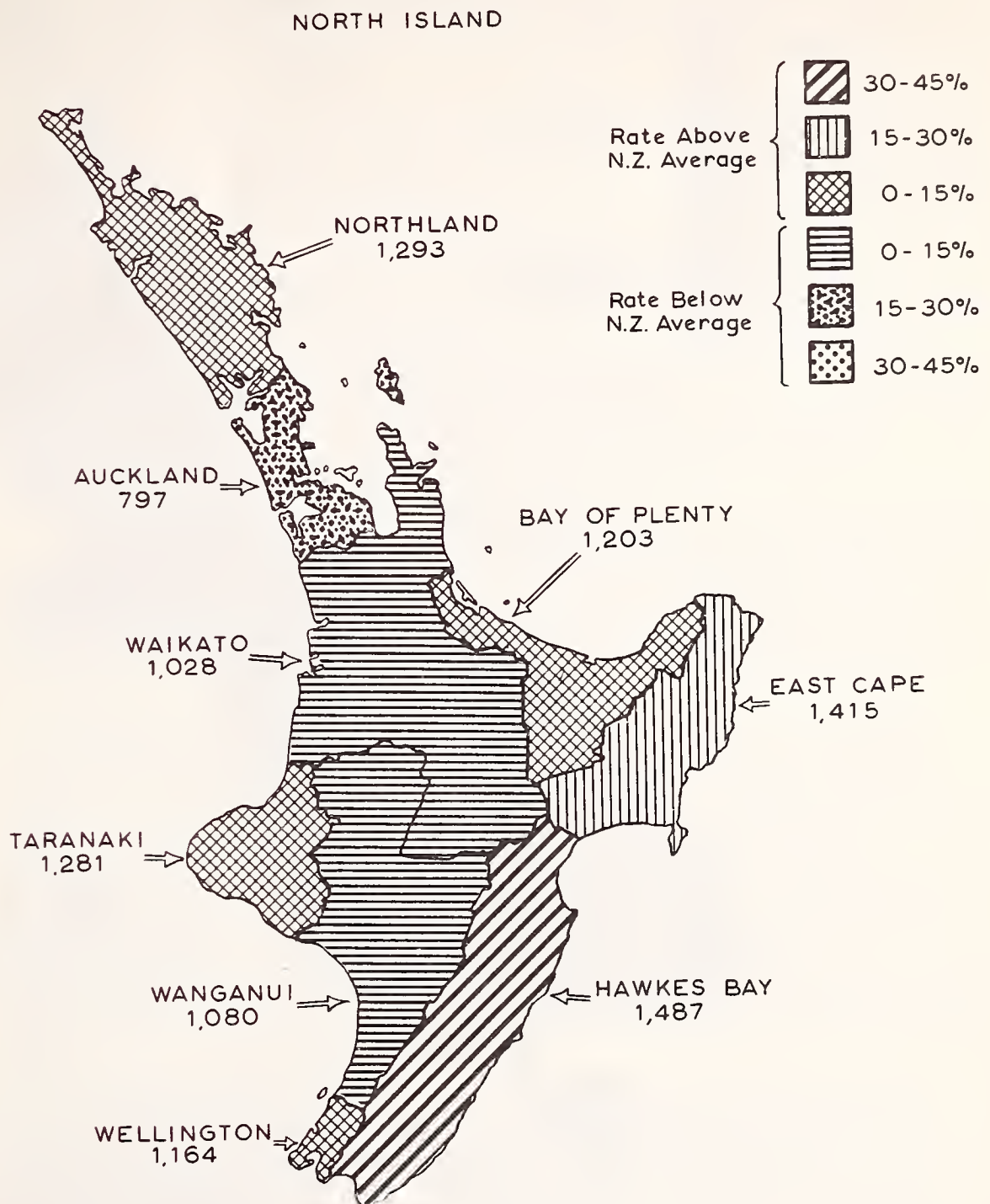
<u>Age distribution of residents in each region</u>						
<u>Region</u>	<u>Percentages in each age-group</u>					
	0-	5-	15-	25-	45-	65+
Northland	19	34	14	19	11	3
Auckland	20	24	22	24	8	1
Waikato	21	30	17	21	9	2
Bay of Plenty	22	32	15	20	9	2
East Cape	21	34	13	20	10	3
Hawke's Bay	20	29	18	22	9	2
Taranaki	20	30	16	21	10	2
Wanganui	21	29	17	22	9	2
Wellington	17	15	32	27	8	1
South Island	15	17	27	28	10	2
New Zealand	20	29	18	22	9	2

Comparing regional distributions with that for New Zealand, Hawke's Bay was typical. Twenty per cent of the residents were aged under 5 years, 29 per cent were aged between 5 - 14 years, 18 per cent were aged between 15 and 24 years, 22 per cent were aged between 25 and 44 years, 9 per cent were aged between 45 and 64 years and 2 per cent were aged 65 years and over. Northland, Waikato, Bay of Plenty, East Cape, Taranaki and Wanganui follow this pattern very closely. In the Auckland region the main deviation was that about 4 per cent more of the residents were in the adolescent and early working years group and 5 per cent less of the residents were in the school children group. In the Wellington region there was about half the New Zealand average in the school children group whereas the adolescent and early working years group comprised one third of the population compared with one sixth for New Zealand as a whole. For the South Island region about one third of the residents were pre-school and school children as against nearly one half for New Zealand and 55 per cent were aged between 15 and 44 years as against 40 per cent for New Zealand.

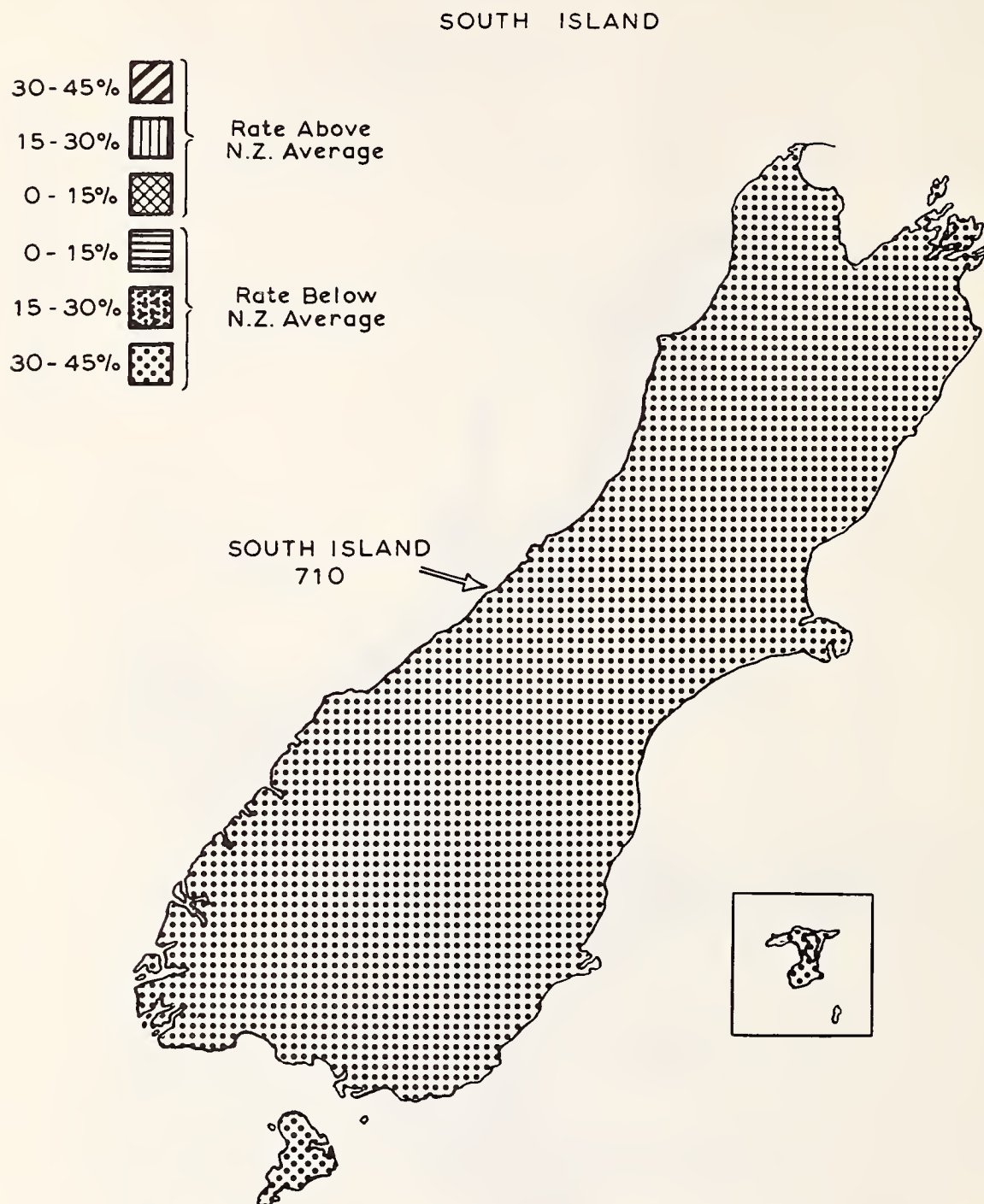
Looking at the regional age-structure patterns as a whole it is apparent that for seven of the ten regions there was little likelihood that regional differences in hospitalization rates could have been caused to any significant degree by different age-structures in the regional populations. In the other three regions there were greater differences in the age-structure and these could have affected the hospitalization rates. Even so the greatest differences between the New Zealand age-structure pattern and these three regions occurred in age-groups with the lowest hospitalization rates. This tends to minimise rather than accentuate the effect. For instance, the age-groups with the highest hospitalization rates were 65 years and over and under five years. In the 65 years and over group the percentage of residents in these three regions varied by no more than one per cent of the total residents and in the under 5 years group the variation was not more than 5 per cent of total residents.

Information about regional differences in causes of admission for Maoris is contained in Appendix A.

FIGURE 7  
 REGIONAL HOSPITALIZATION FOR MAORIS 1961  
 - RATE PER 10,000 MAORI POPULATION -



**FIGURE 8**  
**REGIONAL HOSPITALIZATION FOR MAORIS 1961**  
 -RATE PER 10,000 MAORI POPULATION -



#### 4.3 What effect does urbanization have on admission to hospital?

In two of the regions shown in this report the Maori population lived predominantly in cities. In the Wellington region 93.7 per cent of the Maoris lived in the Wellington and Hutt Urban Areas and in the Auckland region 78.7 per cent lived in the Auckland Urban Area. If there were differences in the pattern of hospitalization rates between these two regions and the rest of New Zealand some indication might be obtained of the effect of urbanization on the frequency with which Maoris enter hospital.

There were many differences between regions whether they were predominantly urban or not, but in the leading causes of admission the Auckland and Wellington regional rates were usually considerably lower than the New Zealand Maori average rates. For instance, in the leading cause, pneumonia, the Auckland rate was 51.1, the Wellington rate was 74.3 and the New Zealand rate was 110.5, all rates per 10,000 population. In the second leading cause, fractures, the rates per 10,000 population were Auckland 28.5, Wellington 49.0, and New Zealand 60.0. In the third leading cause, diseases of skin and cellular tissue, the rates per 10,000 population were Auckland 21.4, Wellington 39.5 and New Zealand 58.0. Again in the fourth leading cause, symptoms, senility and ill-defined conditions, the rates per 10,000 population were Auckland 35.7, Wellington 49.0 and New Zealand 53.4. The Auckland and Wellington rates were both substantially lower than the New Zealand rate for diabetes mellitus, rheumatic fever and chronic rheumatic heart disease, hypertensive and other heart diseases, diseases of buccal cavity and oesophagus, and burns.

On the other hand the predominantly urban regions sometimes had higher rates than the rest of the country. This was particularly so for deliveries and complications of pregnancy, childbirth and the puerperium where the Auckland rate was 47 per cent higher and the Wellington rate 164 per cent higher than the New Zealand rate. The Wellington rates for mental, psychoneurotic and personality disorders were also several times higher than the New Zealand Maori rate.

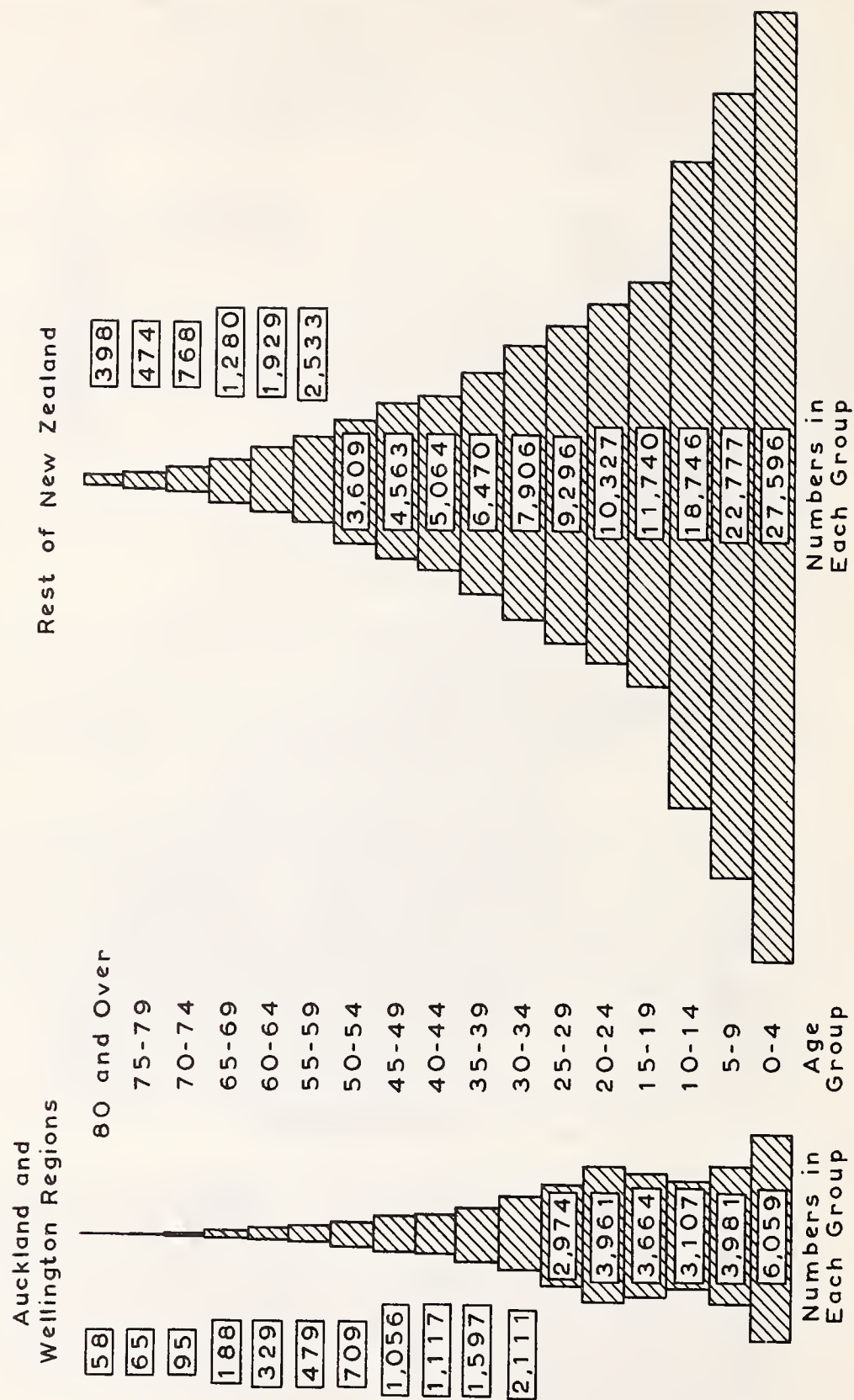
Differences such as these in rates are caused not only by environmental factors and the age-structure of the population, which in part determine the amount of sickness occurring in the various regions, but are also caused by the availability of treatment and the willingness with which it is accepted. Different regional rates are caused by a compound of these factors and as a consequence are extremely difficult to untangle as a prerequisite to evaluation. To take an example, the tuberculosis rate for Auckland was one of the highest in New Zealand but it is not clear how much this is due to better detection of the disease and how much to environmental conditions precipitating the disease. Certainly the age-structure of the population with a large proportion of young adults would tend to promote a high tuberculosis rate. Yet in the region where the concentration of young adults was highest, in Wellington the hospitalized tuberculosis rate was below the New Zealand average.

There is no doubt that there were differences in the hospitalization rates between the predominantly urban regions and the rest of New Zealand even if the pattern was not entirely clear cut. The reasons for some of these differences are that hospitalization rates in rural regions were higher probably because of the absence of alternative means of receiving treatment while the availability of general medical practitioners and out-patient facilities at hospitals in the cities probably caused lower rates in urban regions. The higher rates for some diseases such as psychiatric disorders in the urban regions probably occurred because specialist services were available there rather than because there were more of these sorts of illnesses in the cities.

FIGURE 9

# AGE STRUCTURE OF MAORI POPULATION

1961 CENSUS



#### 4.4 What pattern is Maori hospitalization likely to assume in the future?

The Maori population is growing at a much quicker rate than the European population. Although in 1901 the proportion of Maoris in the total New Zealand population was one in 18, by 1926 it had fallen to one in 22. This trend was subsequently reversed however and by 1961 the proportion was one in 14. Population projections have put the proportion as one in seven by the year 2000, but such forecasts depend upon several factors remaining constant, and the future course of these factors remains largely unpredictable. If present conditions continue it would be reasonable to expect not only that public hospitals must cater in the future for a larger proportion of Maori patients but also that the need to provide additional public hospital accommodation will be greater in those areas in which the bulk of the Maori population lives than elsewhere. Such a proposition however depends on three constants, namely that the Maori population will continue to expand at its present rate of growth, that the Maori rate of hospitalization will remain at its current level, and that most Maoris will continue to live in rural areas. Clearly with so many factors involved no simple answer can be given but at least it is likely that a better understanding of the issues will be obtained if these three topics are examined more closely.

Promoted largely by a high birth rate the proportion of Maoris in the community is growing quickly. The average annual Maori birth rate per 1,000 mean population for the five years 1959 to 1963 was 45.55 while that for Europeans over the same period was 26.30 or not much greater than half the Maori rate. There is very little information about family size in New Zealand but that which is available suggests that Maori families in excess of twelve children are not at all uncommon. At about the time when the Maori birth rate was at its peak of 46.41 per 1,000 mean population in 1960 and 1961 the opinion was expressed by field workers that the majority of Maori women would welcome help and guidance in family planning. In the few years since then the Maori birth rate has in fact fallen but whether this is the start of a new downward trend or is nothing but a temporary decline it is not possible to say at this stage. It should be noted however that there has recently been both in New Zealand and elsewhere a decline in the birth rate, and there is speculation that this is due to the introduction of oral contraceptives. If the decline is due to this factor as seems quite likely the downward trend could well continue. On balance then it seems that although the Maori population will continue to grow it is possible that the rate of growth will not be maintained at the very high level of recent years.

The question of whether the Maori hospitalization rate will remain at its present level depends on many factors some of which will have the effect of increasing the number of Maoris admitted to hospital while others will have the opposite effect.

Attitudes to hospitalization are important. Field workers have reported that among Maoris interviewed it is not uncommon to find conditions such as hernia, haemorrhoids and uterine fibroids for which no treatment had been sought. In some instances the people concerned were unaware that relief could be obtained and had learned to live with their complaints. No doubt too there still remains, perhaps among older Maoris in the more remote areas, vestiges of the authority of the tohunga and some lingering mistrust of European medicine. If the need of treatment is not an urgent matter it is characteristic of mankind to find good reasons why the seeking of medical advice can further be delayed. It has been shown that in maternity cases there had been a great change in the proportion of Maoris born in hospital during the last three decades. In 1937, 17 per cent of Maoris were born in hospital, in 1947 the proportion had increased to 50 per cent, while in 1962 it was 95 per cent. This shows that the hospital has become accepted by Maori mothers as the place in which they prefer to be delivered of their children. It may well be that as confidence in hospitals for maternity cases now approaches the European level of 99 per cent, Maori confidence in hospitals for treatment of illnesses or injuries in general probably also approximates the European level.

Sub-standard housing has long been acknowledged as a prime etiological factor in Maori ill-health. Over-crowding, inadequate toilet and sanitation facilities, houses which are poorly constructed and maintained all make their contribution. The need for re-housing is well-recognised and is actively being carried out, but even if overnight all Maoris could be adequately housed there would remain a sizeable number of Maoris in the community who have lived long enough in unsatisfactory conditions to already be predisposed towards such diseases as tuberculosis and rheumatic fever. From the standpoint of providing hospital beds therefore it appears that a gradual rather than a dramatic decline is to be expected in the number of cases entering hospital for treatment of those diseases closely associated with living in unsatisfactory conditions. Also, as such a large amount of time is spent in hospitals by Maoris with tuberculosis and rheumatic fever, a decrease in total bed occupancy can confidently be expected concomittantly with the decrease in bed stay for these two diseases. To sum up then, it seems that Maori hospitalization rates will probably gradually decline from their current level.

The third topic is whether or not those districts in which most Maoris have customarily lived in the past will continue to cater for the bulk of the Maori population. First let us look at the percentage of Maoris living in cities and boroughs as disclosed by the census. In 1926 nine per cent of Maoris lived in cities and boroughs. By 1951 the percentage had risen to 19 per cent and by 1961 the proportion had risen to 35 per cent. If to this latter figure are added Maoris living in Urban Areas contiguous to cities the proportion of Maoris living in town in 1961 is increased to 39.4 per cent. On the basis of the city and borough figures only it is seen that in the 25 years before 1951 the proportion of Maoris living in towns increased ten per cent while for the ten years following 1951 the increase was 16 per cent. If the current rate of increase which is in the vicinity of two per cent a year is maintained more Maoris will live in town than in the country by 1970. It would appear then that the increased demand for hospital beds by population growth will mainly be made in the larger towns rather than in country areas.

# 5. DEATHS OF MAORIS AND EUROPEANS IN PUBLIC HOSPITAL

During 1961 21,782 deaths were registered in New Zealand. Some of these were for people who had died in the last few days of 1960 and some would be accidental deaths occurring in 1960 but not registered until the inquests were held in 1961. Excluding people who died in casualty departments, in ambulances on the way to hospital, in old people's homes and in mental hospitals, there were 10,289 deaths in public hospitals. Of these 610 were Maoris. Although the two sets of figures are not strictly comparable the ratio of deaths in public hospital in 1961 per 100 deaths registered in 1961 can be computed. It was 44.0 for Maoris and 47.5 for Europeans.

The case fatality rates for Maoris and Europeans are shown below for the main diagnostic groups.

<u>I.C.D.</u> <u>Nos.</u>	<u>Diagnostic group</u>	<u>Number of deaths and case fatality rate per 100 admissions</u>			
		<u>Maori</u>		<u>European</u>	
		<u>No.</u>	<u>Rate</u>	<u>No.</u>	<u>Rate</u>
001-019	Tuberculosis - all forms	28	3.9	74	5.2
020-138	Other infective and parasitic diseases	22	3.6	72	2.5
140-205	Malignant neoplasms	60	21.4	1,986	22.7
210-239	Benign and unspecified neoplasms	2	1.0	31	0.8
240-245	Allergic disorders	1	0.7	25	1.9
250-254	Diseases of thyroid gland	-	-	9	1.2
260	Diabetes mellitus	12	7.9	128	7.6
270-289	Avitaminoses, and other metabolic and endocrine gland diseases	3	3.1	20	3.4
290-299	Diseases of blood and blood-forming organs	6	10.3	73	8.1
300-309	Psychosis	-	-	83	5.5
310-326	Psychoneurotic, character, behaviour and intelligence disorders	2	1.9	18	0.8
330-334	Vascular lesions affecting central nervous system	43	37.1	1,454	43.7
340-369	Inflammatory and other diseases of central nervous system, nerves and peripheral ganglia	25	10.0	256	9.5
370-389	Diseases of eye	1	0.3	9	0.3
390-398	Diseases of ear and mastoid process	1	0.3	4	0.3
400-416	Rheumatic fever and chronic rheumatic heart disease	22	5.6	40	5.8
420-422	Arteriosclerotic and degenerative heart disease	27	25.7	1,294	25.6
430-447	Hypertensive and other heart disease	65	20.8	705	23.2
450-456	Diseases of arteries	6	25.0	207	19.3

		<u>Maori</u>		<u>European</u>	
		<u>No.</u>	<u>Rate</u>	<u>No.</u>	<u>Rate</u>
460-468	Diseases of veins and other diseases of circulatory system	2	0.6	74	1.6
470-483	Acute upper respiratory infections and influenza	4	1.6	6	0.3
490-493	Pneumonia	88	4.8	470	12.2
500-502	Bronchitis	4	0.6	201	7.5
510	Hypertrophy of tonsils and adenoids	-	-	-	-
511-527	Other diseases of respiratory system	16	4.2	93	3.7
530-539	Diseases of buccal cavity and oesophagus	-	-	12	0.6
540-545	Diseases of stomach and duodenum	3	3.5	121	4.8
550-553	Appendicitis	2	0.3	20	0.4
560-561	Hernia of abdominal cavity	4	1.0	46	1.0
570-578	Other diseases of intestines and peritoneum	34	5.8	178	4.4
580-587	Diseases of liver, gallbladder and pancreas	6	4.6	145	4.6
590-609	Diseases of urinary system	22	7.3	200	6.5
610-617	Diseases of male genital organs	1	0.9	107	4.3
620-637	Diseases of breast, and female genital organs	1	0.1	9	0.1
640-648	Complications of pregnancy	-	-	1	..
650-652	Abortion	1	0.2	3	0.1
660-689	Delivery and complications of the puerperium	-	-	7	0.3
690-716	Diseases of skin and cellular tissue	2	0.2	24	0.5
720-727	Arthritis and rheumatism except rheumatic fever	-	-	77	3.3
730-749	Osteomyelitis and other diseases of musculoskeletal system	-	-	32	0.6
750-759	Congenital malformations	32	14.7	179	6.6
760-776	Certain diseases of early infancy	27	13.9	244	15.3
780-795	Symptoms, senility and ill-defined conditions	6	0.7	354	3.5
N800-829	Fractures	10	1.0	422	4.8
N850-856	Head injury except fracture	9	1.7	92	2.0
N870-908	Open wounds	1	0.1	6	0.1
N940-949	Burns	2	0.7	20	1.5
N960-979	Effects of poisons	-	-	17	1.0
-	All other injuries and adverse reactions	7	1.1	30	0.7
Y00-18	Special admissions	-	-	1	0.1
Totals		610	3.2	9,679	5.8

For most diagnostic groups the case fatality ratios for Maoris and Europeans were similar although overall the European rate at 5.8 per 100 was considerably higher than the rate of 3.2 per 100 for Maoris. The diagnostic groups contributing most to this higher European ratio were vascular lesions affecting the central nervous system; pneumonia; bronchitis; diseases of male genital organs; arthritis and rheumatism except rheumatic fever; symptoms, senility and ill-defined conditions; and fractures. In only congenital malformations did the Maori ratio exceed the European ratio by any sizeable margin.

What was the reason for the higher European ratio? The hospitalization rates for Maoris are for most diseases higher than those for Europeans, quite often much higher. As the hospitalization rates are based on total admissions, that is first admissions as well as readmissions, an explanation of the higher case fatality ratios could be that the Maori ratios were lower because of a large number of Maori readmissions. This however is not the case, there being very little difference between Maori and European readmission rates. Another explanation could be that there is a tendency for Maoris with very poor prognosis to leave hospital to die at home. If this practice were very widespread it could have the effect of reducing the Maori case fatality ratio to a significant degree. However as it has been shown that the proportion of Maoris dying in public hospitals to total Maori deaths registered differs very little from the European proportion it is unlikely that much of the difference in Maori and European case fatality ratios can be ascribed to this cause. The most likely explanation is that a large number of European deaths was concentrated in a handful of diseases and that this concentration was large enough to ensure that the overall European ratio was considerably raised. The two diagnostic groups, vascular lesions affecting the central nervous system and arteriosclerotic and degenerative heart disease, which had the two highest case fatality ratios were prime examples of this in that they alone accounted for 28.4 per cent of European deaths but only 8.5 per cent of Maori deaths.

## 6. CAUSES OF ADMISSION

In this section mention is made of regional differences in 50 causes of admission. In general, the regions are referred to only when they had a high or a low rate. Complete information about the number of Maori cases and rates per 10,000 population living in each region is shown by the 50 disease groups in Appendix A.

### 6.1 Tuberculosis - all forms (I.C.D. Nos. 001-019)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	57	79	16.9	3.1	437
5 - 14	94	84	19.3	1.8	884
15 - 24	130	117	43.8	3.7	1,378
25 - 44	260	507	71.2	8.9	4,044
45 - 64	139	439	86.4	9.9	3,830
65 & over	43	192	171.3	9.4	3,517
Total	723	1,418	43.3	6.3	14,090
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	98.5	71.0	81.7		
Europeans	89.7	86.6	80.0		

This is a very important diagnostic group not only because the Maori rate was so very much larger than the European rate, but also because such a big part of the total time spent by Maoris in public hospitals was due to this disease.

Included under this heading were 566 Maori cases and 1,140 European cases of respiratory tuberculosis. There was little difference in the ratio of respiratory to non-respiratory cases which were 78 respiratory to 22 non-respiratory for Maoris and 80 respiratory to 20 non-respiratory for Europeans.

When adjusted for age the Maori hospitalization rate was found to be ten times higher than the European rate. In no other diagnostic group was the disparity between Maori and European rates as great as this. The percentage was 893.7. The biggest difference in the age-groups was for ages 65 years and over where the Maori rate was 171.3 per 10,000 population and the European rate was 9.4 per 10,000 population.

The average stay for first admissions was 9 days longer for Maoris, while for readmissions the average stay of Europeans was 16 days longer. The aggregate stay for Maoris with tuberculosis was 67,559 days. This was equivalent to nearly one fifth of the total time spent in public hospital by Maoris. By way of contrast, Europeans with tuberculosis made up only one twentyfifth of the total time spent in public hospital by Europeans.

The highest regional rates per 10,000 population for Maoris were 57.5 for South Island, 56.7 for Taranaki, 54.7 for Auckland and 54.6 for Northland. Low rates were recorded for East Cape with 31.8 and Bay of Plenty with 26.2

## 6.2 Other infective and parasitic diseases (I.C.D. Nos. 020-138)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	234	514	69.5	19.9	1,796
5 - 14	131	550	26.9	12.0	1,233
15 - 24	95	637	32.0	20.2	1,007
25 - 44	102	650	27.9	11.4	1,585
45 - 64	30	298	18.7	6.7	829
65 & over	12	203	47.8	9.9	981
Total	604	2,852	36.1	12.7	7,431
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	26.5	24.0	90.9		
Europeans	18.5	26.2	92.7		

Among the many diseases included under this heading those most often reported in Maoris were infectious hepatitis 89 cases, acute poliomyelitis 58 cases, hydatid disease 53 cases, measles 41 cases, bacillary dysentery 32 cases, whooping cough 29 cases, typhoid fever 23 cases and chickenpox 22 cases. Together these eight diseases accounted for 57.5 per cent of the Maori cases. An indication of the extent to which hydatid disease prevails in Maoris was that 38.7 per cent of hydatid disease cases were Maoris. When adjusted for age the Maori rate was eleven times higher than the European rate.

The age-adjusted Maori hospitalization rate was two and half times (160.6 per cent) higher than the European rate. The greatest difference in the age-specific rates was for ages 65 years and over, where the Maori rate was nearly five times higher than the European rate.

The region with the highest rate for Maoris was Hawke's Bay 77.6, followed by East Cape 52.0 and Bay of Plenty 48.6. Low rates were reported from Wanganui 13.9 and South Island 12.6. (All rates per 10,000 population).

## 6.3 Malignant neoplasms (I.C.D. Nos. 140-205)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	4	93	1.2	3.6	31
5 - 14	20	140	4.1	3.1	188
15 - 24	17	133	5.7	4.2	179
25 - 44	56	1,086	15.3	19.1	869
45 - 64	130	3,609	80.8	81.4	3,582
65 & over	54	3,702	215.1	180.4	4,416
Total	281	8,763	16.8	39.0	9,265
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	25.9	20.0	65.5		
Europeans	25.9	21.6	63.6		

Although the crude rates showed the European rate to be more than double the Maori rate, when adjusted for age there was very little difference at all between the two, the Maori rate in fact being 5.7 per cent higher. The sites most frequently reported in Maoris were breast 40 cases, lung 38 cases (including 12 females), cervix 27 cases, stomach 21 cases and lymphosarcoma and reticulosarcoma 15 cases.

The average stay and readmission patterns were remarkably alike.

The three regions with the highest rates per 10,000 population were Taranaki 29.9, East Cape 24.4 and South Island 23.8, while Hawke's Bay with 11.5 and Bay of Plenty with 6.9 reported the lowest rates.

## 6.4 Benign and unspecified neoplasms (I.C.D. Nos. 210-239)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	26	138	7.7	5.3	199
5 - 14	24	223	4.9	4.9	225
15 - 24	35	602	11.8	19.1	371
25 - 44	60	1,335	16.4	23.5	931
45 - 64	43	1,168	26.7	26.3	1,184
65 & over	8	364	31.9	17.7	655
Total	196	3,830	11.7	17.0	3,565
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	13.3	19.7	90.3		
Europeans	10.9	10.7	89.2		

Forty per cent of the Maori cases in this title were neoplasms of female genital organs. The age-adjusted rate for Maoris was 6.9 per cent below that for Europeans.

There was little difference in the average stay of first admissions but Maori readmissions stayed on the average nearly twice as long as Europeans.

Three regions had high rates, East Cape with 19.6 per 10,000 population, Wellington with 17.4 per 10,000 population and Hawke's Bay with 15.3 per 10,000 population.

## 6.5 Allergic disorders (I.C.D. Nos. 240-245)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	45	170	13.4	6.6	346
5 - 14	19	217	3.9	4.7	179
15 - 24	24	156	8.1	5.0	255
25 - 44	38	269	10.4	4.7	591
45 - 64	17	319	10.6	7.2	470
65 & over	5	171	19.9	8.3	409
Total	148	1,302	8.9	5.8	2,250
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	13.1	10.4	79.7		
Europeans	14.9	14.0	86.1		

Eight out of ten cases classified to this heading were asthma cases. The age-adjusted hospitalization rate for Maoris was 72.8 per cent higher than that for Europeans.

Readmission was more common in Maoris. The rates were 20.3 per cent for Maoris and 13.9 per cent for Europeans.

High regional rates were Hawke's Bay 17.2 per 10,000 population and East Cape 17.0 per 10,000 population while Wellington had 4.7 per 10,000 population and South Island reported no cases at all.

## 6.6 Diseases of thyroid gland (I.C.D. Nos. 250-254)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	1	12	0.3	0.5	8
5 - 14	1	10	0.2	0.2	9
15 - 24	2	50	0.7	1.6	22
25 - 44	33	283	9.0	5.0	511
45 - 64	16	297	9.9	6.7	439
65 & over	1	114	4.0	5.6	82
Total	54	766	3.2	3.4	1,071
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	20.0	27.3	94.4		
Europeans	14.8	12.4	90.2		

The crude rates were similar for Maoris and Europeans but when adjusted for age the Maori rate was 39.8 per cent higher. Thyrotoxicosis was more frequently reported in the European than the Maori cases, the percentages of such cases in this diagnostic group being 48.7 per cent for Europeans and 33.3 per cent for Maoris.

The average stay in hospital was 5 days longer for Maori first admissions and more than twice as long for Maori readmissions.

The number of Maori cases reported was small; two regions, Taranaki and South Island reporting no cases at all. East Cape with 7.4 per 10,000 population or more than twice the New Zealand average, had the highest rate.

## 6.7 Diabetes mellitus (I.C.D. No. 260)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	1	11	0.3	0.4	8
5 - 14	-	89	-	1.9	-
15 - 24	12	101	4.0	3.2	126
25 - 44	41	298	11.2	5.2	636
45 - 64	74	502	46.0	11.3	2,039
65 & over	23	681	91.6	33.2	1,881
Total	151	1,682	9.0	7.5	4,690
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	29.2	19.2	86.1		
Europeans	32.5	43.1	81.9		

The crude rates proved to be an unreliable indication of differences in hospitalization rates for diabetes. When adjusted for age the Maori rate was higher by 178.8 per cent than the European rate. The highest age-specific rate was for Maoris aged 65 years and over, 91.6 per 10,000 population. This was nearly three times higher than the corresponding rate for Europeans.

The average stay for Maori first admissions at 29.2 days was three days less than that for European first admissions, but for readmissions the average European stay was more than twice as long. Readmission was twice as common in Europeans.

Regions with high rates were East Cape, 15.9 per 10,000 population or 76.7 per cent above the New Zealand average, Bay of Plenty 13.9 per 10,000 population, Hawke's Bay 13.4 per 10,000 population and Northland 12.9 per 10,000 population. Regions with low rates were Auckland 4.4 per 10,000 population, South Island which reported one case, and Wellington with no case reported at all.

6.8 Avitaminoses, and other metabolic and endocrine gland diseases  
(I.C.D. Nos. 270-289)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	21	86	6.2	3.3	160
5 - 14	6	34	1.2	0.7	55
15 - 24	5	57	1.7	1.8	53
25 - 44	30	155	8.2	2.7	466
45 - 64	25	181	15.5	4.1	687
65 & over	9	80	35.9	3.9	737
Total	96	593	5.7	2.6	2,158
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	24.1	19.2	86.5	
Europeans	22.4	18.7	87.9		

The crude hospitalization rate for Maoris was more than twice the European rate but when corrected for age the rate was 263.9 per cent higher for Maoris. The leading diagnosis in Maoris was gout (36 cases) of whom 32 were males.

There was little difference in the average stay of Maori and European first admissions or in the readmission rate.

The East Cape region (11.7 per 10,000 population) and Hawke's Bay region (9.6 per 10,000 population) were well above the New Zealand average of 5.7 per 10,000 population.

6.9 Diseases of blood and blood-forming organs (I.C.D. Nos. 290-299)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	32	104	9.5	4.0	245
5 - 14	6	65	1.2	1.4	55
15 - 24	7	64	2.4	2.0	76
25 - 44	7	95	1.9	1.7	108
45 - 64	6	171	3.7	3.9	164
65 & over	-	404	-	19.7	-
Total	58	903	3.5	4.0	648
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	27.6	14.4	84.5	
Europeans	23.1	11.5	74.2		

The number of Maori cases was small, 32 or 55 per cent being aged under 5 years. In this age-group the Maori rate was twice the European rate. In other age-groups the rates were very similar except for 65 years and over for which no Maoris were reported. The age-adjusted Maori rate was 28.2 per cent below the European rate. In Maoris 26 cases of iron deficiency anaemia and 12 cases of haemophilia were reported.

The percentage of readmissions was much higher for Europeans, 25.8 per cent of all cases as against 15.5 per cent for Maoris. As the number of cases was small and the readmission rate fairly high it is not possible to draw valid conclusions about the regional distribution of this group of diseases.

## 6.10 Psychoses (I.C.D. Nos. 300-309)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	-	-	-	-	-
5 - 14	-	14	-	0.3	-
15 - 24	25	153	8.4	4.9	264
25 - 44	23	433	6.3	7.6	358
45 - 64	7	426	4.4	9.6	195
65 & over	3	486	12.0	23.7	246
Total	58	1,512	3.5	6.7	1,063
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	12.6	11.3	87.9		
Europeans	24.6	34.8	91.5		

As the number of Maori cases was small caution must be exercised in drawing conclusions from these figures. However it is worth noting that the European hospitalization rate was over forty per cent higher than the Maori rate. The two leading diagnoses for Maoris were schizophrenic disorders with 33 cases and manic-depressive reaction with 14 cases.

The average stay for European first admissions was twice as long as that for Maori first admissions while for readmissions Europeans averaged three times as long in hospital as Maoris. The Maori readmission rate was higher (12.1 per cent) than the European rate (8.5 per cent).

Because the numbers were small and the readmission rates comparatively high no comment is made on regional rates except that Wellington and Hawke's Bay had rates much higher than other regions.

## 6.11 Psychoneurotic, character, behaviour and intelligence disorders (I.C.D. Nos. 310-326)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	10	90	3.0	3.5	78
5 - 14	10	107	2.1	2.3	96
15 - 24	29	332	9.8	10.6	308
25 - 44	42	843	11.5	14.8	653
45 - 64	12	782	7.5	17.6	332
65 & over	2	229	8.0	11.2	164
Total	105	2,383	6.3	10.6	1,631
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	13.5	33.0	95.2		
Europeans	13.1	14.3	89.7		

The most frequently reported diagnoses in Maori cases were hysterical reaction 24 cases, non-psychotic alcoholism 21 cases, and anxiety reaction 20 cases. Among Europeans the leading diagnoses were non-psychotic alcoholism 825 cases, anxiety reaction 547 cases and hysterical reaction 389 cases.

The age-adjusted hospitalization rate for Europeans was 46.1 per cent higher than that for Maoris. The average stay for Maori and European first admissions was similar but for readmissions the Maori average stay was more than twice as long as the European average. The readmission rate was twice as high for Europeans as for Maoris.

The region with by far the highest rate was Wellington with 34.8 per 10,000 population. The New Zealand average Maori rate was 6.3 per 10,000 population.

## 6.12 Vascular lesions affecting central nervous system (I.C.D. Nos. 330-334)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	8	20	2.4	0.8	62
5 - 14	2	7	0.4	0.2	18
15 - 24	8	27	2.7	0.9	85
25 - 44	21	157	5.7	2.8	324
45 - 64	36	934	22.4	21.1	993
65 & over	41	2,184	163.3	106.4	3,353
Total	116	3,329	6.9	14.8	4,835
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	Europeans			
	36.3	23.4	90.5		
	53.7	94.4	92.8		

Cerebral haemorrhage, cerebral thrombosis, subarachnoid haemorrhage and cerebral arteriosclerosis were the four principal diseases in this group. The age-adjusted rate for Maoris was 45.2 per cent higher than the European rate mainly due to cases in the 65 years and over age-group.

Europeans spent much longer time in hospital - 17 days for first admissions and 70 days for readmissions - but there was little difference in the percentage of Maori and European cases readmitted.

Wellington with 15.8 per 10,000 population had the highest regional rate.

6.13 Inflammatory and other diseases of central nervous system,  
nerves and peripheral ganglia (I.C.D. Nos. 340-369)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	79	286	23.5	11.1	607
5 - 14	63	292	13.0	6.4	596
15 - 24	30	249	10.1	7.9	318
25 - 44	35	583	9.6	10.3	545
45 - 64	35	595	21.8	13.4	966
65 & over	9	697	35.9	33.9	737
Total	251	2,702	15.0	12.0	3,769
	Average stay in days		Percentage of first admissions		
	First admissions	Readmissions	in all admissions		
Maoris	34.1	17.7	80.9		
Europeans	51.2	68.3	86.9		

The two leading causes of hospitalization for Maoris in this group were epilepsy (67 cases) and meningitis (50 cases). The Maori age-adjusted rate was 39.5 per cent higher than the European rate. The greatest differences between the Maori and European age-specific rates occurred at the younger ages.

The average stay for Europeans was much higher than for Maoris - 17 days for first admissions and 50 days for readmissions. If allowance is made for the case mentioned below the difference for readmissions is reduced by ten days to 40 days. There was a substantial group of long-stay European cases of cerebral paralysis, paralysis agitans and multiple sclerosis which largely accounted for the longer European stay. The readmission rate for Maoris at 19.1 per cent was higher than the European rate at 13.1 per cent.

The regional rate for Taranaki was very high. Whereas the New Zealand Maori rate was 15.0 per 10,000 population, the Taranaki rate was 69.3. However nearly half the Taranaki admissions were for a single cerebral spastic infantile paralysis patient who had been readmitted 21 times during 1961. If all but one of these readmissions were excluded from the calculations, the Taranaki rate at 37.8 per 10,000 population would still have been more than twice as high as that for any other region in New Zealand.

## 6.14 Diseases of eye (I.C.D. Nos. 370-389)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	29	470	8.6	18.2	222
5 - 14	62	767	12.8	16.7	587
15 - 24	32	279	10.8	8.9	340
25 - 44	69	400	18.9	7.0	1,074
45 - 64	68	619	42.3	14.0	1,875
65 & over	31	946	123.5	46.1	2,536
Total	291	3,481	17.4	15.5	6,634
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	13.6	13.0	90.4		
Europeans	11.6	13.0	90.1		

The main disorders of eye in Maoris were cataract 61 cases, corneal ulcer 36 cases, strabismus 27 cases and keratitis 23 cases accounting for just over 50 per cent of all cases in this disease group. The age-adjusted rate for Maoris was 90.6 per cent higher than that for Europeans, the biggest difference being in the rates per 10,000 people aged 65 years and over where the Maori rate was 123.5 and the European rate 46.1.

The highest regional Maori rates per 10,000 population were at Wellington 25.3, Waikato 23.7, and Bay of Plenty 21.4. Only two cases were reported from the South Island.

## 6.15 Diseases of ear and mastoid process (I.C.D. Nos. 390-398)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	165	340	49.0	13.2	1,266
5 - 14	109	298	22.4	6.5	1,026
15 - 24	16	131	5.4	4.2	170
25 - 44	15	304	4.1	5.4	233
45 - 64	4	218	2.5	4.9	111
65 & over	-	82	-	4.0	-
Total	309	1,373	18.5	6.1	2,806
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	15.7	12.1	93.2		
Europeans	8.5	9.6	94.4		

Inflammatory diseases of the ear made up most cases in this group, 94.8 per cent of the Maoris and 63.0 per cent of the Europeans being assigned to this sub-group. The age-adjusted Maori hospitalization rate was 104.4 per cent higher than the European rate.

Maori first admissions stayed in hospital on the average nearly twice as long as European first admissions.

The New Zealand average Maori hospitalization rate per 10,000 population was 18.5. The highest regional rates were Hawke's Bay 32.6 and Northland 29.6 and the lowest were Wanganui 9.3 and Wellington 7.9.

6.16 Rheumatic fever and chronic rheumatic heart disease  
(I.C.D. Nos. 400-416)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	9	14	2.7	0.5	70
5 - 14	230	219	47.3	4.8	2,168
15 - 24	91	97	30.6	3.1	963
25 - 44	46	160	12.6	2.8	716
45 - 64	15	147	9.3	3.3	412
65 & over	1	52	4.0	2.5	82
Total	392	689	23.5	3.1	4,411
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	Europeans			
	57.0	71.9	88.5		
	38.7	46.9	86.9		

The age-adjusted figures gave a Maori hospitalization rate that was over six times as high as the European rate (540.2 per cent). The age-specific rates for Maoris aged 5 to 24 years were in the vicinity of ten times higher than the European rates. Nearly half the Maori cases (191 or 48.7 per cent) were reported as rheumatic fever with no mention of heart involvement. In a further 98 cases (25.0 per cent) rheumatic fever was reported with heart involvement and in 80 cases the condition was described as a chronic rheumatic heart disease.

The average stay for Maoris was 18 days longer for first admissions and 25 days longer for readmissions. Little difference was reported in readmission rates.

The East Cape hospitalization rate (47.2 per 10,000 population) was twice as high as the New Zealand average (23.5 per 10,000 population) and other regions with high rates were Northland (28.7 per 10,000 population) and Wanganui (28.5 per 10,000 population). Regions with low rates were Auckland (13.1 per 10,000 population), Wellington (7.9 per 10,000 population) and South Island (4.2 per 10,000 population).

6.17 Arteriosclerotic and degenerative heart disease  
(I.C.D. Nos. 420-422)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	-	1	-	..	-
5 - 14	-	2	-	..	-
15 - 24	2	10	0.7	0.3	22
25 - 44	17	291	4.7	5.1	267
45 - 64	52	2,161	32.3	48.7	1,432
65 & over	34	2,581	135.5	125.7	2,782
Total	105	5,046	6.3	22.4	4,503
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	22.9	18.6	91.4		
Maoris					
Europeans	35.7	38.9	92.7		

This title includes diseases of the coronary arteries, chronic non-rheumatic endocarditis and other myocardial degeneration. By far the leading cause for Maoris was coronary heart disease which was reported in 78 cases. The age-specific rates for Maoris were lower than those for Europeans and the age-adjusted hospitalization rate was 10.8 per cent lower for Maoris.

The average stay for European first admissions was 13 days longer and for European readmissions was 20 days longer than the corresponding Maori figures.

Hawke's Bay with 16.3 per 10,000 population, Wellington with 11.1 per 10,000 population and East Cape with 10.1 per 10,000 population had the highest regional rates for Maoris while Northland 2.8 per 10,000 population and Auckland 3.2 per 10,000 population had the lowest.

## 6.18 Hypertensive and other heart disease (I.C.D. Nos. 430-447)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	3	10	0.9	0.4	23
5 - 14	1	15	0.2	0.3	9
15 - 24	13	40	4.4	1.3	139
25 - 44	90	290	24.6	5.1	1,397
45 - 64	138	936	85.8	21.1	3,804
65 & over	68	1,743	270.9	84.9	5,562
Total	313	3,034	18.7	13.5	10,934
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	24.1	26.8	88.5		
Europeans	35.8	45.8	89.0		

There was a marked difference in the hospitalization rates for Maoris and Europeans. When adjusted for age the Maori rate was 260.4 per cent higher than the European rate. The highest age-specific rate was 270.9 per 10,000 population for Maoris aged 65 years and over. Included in the 313 Maori cases were 124 cases of congestive heart failure, 38 cases of hypertensive heart disease and 79 cases of other hypertensive disease.

Europeans stayed longer in hospital, 11 days more for first admissions and 19 days more for readmissions, but the readmission rate was practically the same for both Maoris and Europeans.

Two regions had rates over twice as high as the New Zealand Maori average. They were Taranaki (37.8 per 10,000 population) and East Cape (37.7 per 10,000 population). Low rates were recorded for Auckland (7.5 per 10,000 population), South Island (5.6 per 10,000 population) and Wellington (4.7 per 10,000 population).

## 6.19 Diseases of arteries (I.C.D. Nos. 450-456)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	2	2	0.6	0.1	16
5 - 14	-	9	-	0.2	-
15 - 24	5	19	1.7	0.6	53
25 - 44	10	90	2.7	1.6	153
45 - 64	6	384	3.7	8.7	164
65 & over	1	569	4.0	27.7	82
Total	24	1,073	1.4	4.8	468
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	36.4	36.6	70.8		
Europeans	44.8	33.2	83.4		

There were very few Maori cases assigned to this title. The age-adjusted Maori hospitalization rate was 56.4 per cent below the European rate.

The readmission rate for Maoris was 29.2 per cent and was much higher than the European rate of 16.6 per cent.

As there was an average of less than three cases per region, regional comparisons were not made.

6.20 Diseases of veins and other diseases of circulatory system  
(I.C.D. Nos. 460-468)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	29	87	8.6	3.4	222
5 - 14	25	347	5.1	7.6	234
15 - 24	55	317	18.5	10.1	582
25 - 44	152	1,858	41.6	32.7	2,363
45 - 64	72	1,583	44.8	35.7	1,986
65 & over	13	536	51.8	26.1	1,064
Total	346	4,728	20.7	21.0	6,451
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	12.2	17.7	94.2		
Europeans	13.5	15.9	91.6		

The main diagnosis included in this title was varicose veins of lower extremities which accounted for 66.5 per cent of the Maori cases and for 57.6 per cent of the European cases. The Maori hospitalization rate when adjusted for age was 36.4 per cent higher than the European rate.

There was little difference between Maori and European figures for average stay or readmission rate.

Taranaki with 37.8 per 10,000 population was nearly twice as high as the New Zealand Maori average hospitalization rate while Auckland on the other hand with 6.7 per 10,000 population was only a third as high.

6.21 Acute upper respiratory infections and influenza (I.C.D.Nos. 470-483)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	141	825	41.9	31.9	1,083
5 - 14	40	274	8.2	6.0	376
15 - 24	47	602	15.8	19.1	497
25 - 44	21	169	5.7	3.0	324
45 - 64	5	75	3.1	1.7	137
65 & over	2	30	8.0	1.5	164
Total	256	1,975	15.3	8.8	2,581
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	9.2	12.6	96.9		
Europeans	6.4	7.9	98.2		

The Maori age-adjusted hospitalization rate was 30.7 per cent higher than the European rate. Most Maori cases (55.1 per cent) were aged under five years but for Europeans the proportion in this age-group was 41.8 per cent.

Maoris stayed in hospital a few days longer than Europeans but there was little difference in the rate of readmission.

Hawke's Bay had the highest regional rate for Maoris (26.8 per 10,000 population) followed by Auckland 21.8 per 10,000 population and Wanganui 20.5 per 10,000 population. Wellington 6.3 per 10,000 population and South Island 5.6 per 10,000 population had the lowest rates.

## 6.22 Pneumonia (I.C.D. Nos. 490-493)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	1,136	1,117	337.6	43.2	8,724
5 - 14	222	394	45.7	8.6	2,094
15 - 24	133	201	44.8	6.4	1,409
25 - 44	189	410	51.7	7.2	2,937
45 - 64	124	610	77.1	13.8	3,418
65 & over	42	1,105	167.3	53.8	3,435
Total	1,846	3,837	110.5	17.1	22,017
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	Europeans			
	16.1	17.1	96.5		
	16.4	17.4	97.1		

This diagnosis accounted for one in every ten Maori cases and was for Maoris by far the principal cause of hospitalization. By way of comparison the diagnosis accounted for only one in each 43 European cases. The age-adjusted Maori rate was 473.8 per cent or over five times higher than the European rate.

The age-group with the highest rate was Maoris aged under five years with 337.6 per 10,000 population. In fact 61.5 per cent of all Maori cases were aged under five years. The Maori age-specific rates were from five to eight times higher than the European rates.

The average stay and readmission rates were practically the same for both Maoris and Europeans.

There were very large differences indeed in the regional hospitalization rates. Because of the large number of cases involved the rate per 10,000 population for each region is listed below in descending numerical order.

Hawke's Bay	165.7	Taranaki	110.3
Wanganui	151.7	Waikato	107.9
East Cape	135.2	Wellington	74.3
Northland	135.0	Auckland	51.1
Bay of Plenty	120.7	South Island	33.7

The New Zealand average for Maoris was 110.5.

To a limited extent the lower rates for South Island and Wellington would be caused by the age structure of the respective populations but clearly other more crucial factors have operated in the low rates here.

## 6.23 Bronchitis (I.C.D. Nos. 500-502)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	468	855	139.1	33.1	3,595
5 - 14	48	155	9.9	3.4	454
15 - 24	34	68	11.5	2.2	362
25 - 44	23	121	6.3	2.1	358
45 - 64	59	529	36.7	11.9	1,627
65 & over	29	935	115.5	45.5	2,371
Total	661	2,663	39.6	11.8	8,767
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	14.6	19.1	94.6		
Europeans	20.5	41.5	93.3		

The age-adjusted rate showed that bronchitis was the cause of admission three times as frequently in Maoris as in Europeans. The Maori rate was 229.2 per cent higher than the European rate. The age-specific rates for Maoris were generally three to four times higher than the European rates at all ages. For Maoris, 440 or 66.6 per cent of the cases were stated to be acute, and of the 88 chronic cases emphysema was also reported in 24 cases.

Maoris stayed in hospital on the average, six days less for first admissions and 22 days less for readmissions than Europeans. The big difference in the stay for readmissions was mainly due to long stay elderly patients.

The New Zealand average Maori rate was 39.6 per 10,000 population. Regions with high rates per 10,000 population were Taranaki 67.7, Hawke's Bay 65.1, and East Cape 50.9, while a low rate was reported in Auckland 12.3.

## 6.24 Hypertrophy of tonsils and adenoids (I.C.D. No. 510)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	39	1,495	11.6	57.9	300
5 - 14	261	4,905	53.7	107.0	2,461
15 - 24	31	892	10.4	28.4	327
25 - 44	9	421	2.5	7.4	142
45 - 64	1	53	0.6	1.2	27
65 & over	-	6	-	0.3	-
Total	341	7,772	20.4	34.6	3,257
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	4.6	3.3	98.8		
Europeans	4.0	4.0	96.5		

The observed number of European cases was more than double the expected number of Maori cases. The percentage was 138.6 per cent higher. The rates for ages 5 to 14 years which accommodated two thirds of all cases with this diagnosis were 107.0 per 10,000 population for Europeans and 53.7 per 10,000 population for Maoris. European children were not only admitted more frequently but also at an earlier age than Maori children. The age-specific rate for Europeans aged under 5 years was five times higher than that for Maoris of the same ages. In absolute numbers 11.4 per cent of Maori cases were aged five years as against 19.2 per cent of all European cases.

There was little difference in the average stay or in the readmission rates.

Two regions had particularly high Maori rates. Hawke's Bay and Wanganui each had a rate of 34.5 per 10,000 population as against the New Zealand rate of 20.4 per 10,000 population. Bay of Plenty with 15.5 per 10,000 population and Auckland with 10.7 per 10,000 population had low rates.

## 6.25 Other diseases of respiratory system (I.C.D. Nos. 511-527)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	20	177	5.9	6.8	152
5 - 14	82	382	16.9	8.3	774
15 - 24	85	541	28.6	17.2	900
25 - 44	80	634	21.9	11.2	1,244
45 - 64	79	498	49.1	11.2	2,177
65 & over	34	299	135.5	14.6	2,782
Total	380	2,531	22.7	11.3	8,029
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	23.0	17.1	87.6		
Europeans	11.1	21.7	94.0		

For Maoris the leading diagnosis in this title was bronchiectasis which accounted for 199 or 52.4 per cent of the cases. There were also 28 cases of nasal polyp and 25 cases of chronic sinusitis. Although deflected nasal septum cases were reported in 712 or 28.1 per cent of the European cases in this diagnostic group, only 14 or 3.7 per cent of the Maori cases were assigned to this condition.

The age-adjusted rate for Maoris was three times or 217.2 per cent higher than that for Europeans. For patients aged under 5 years however, the European rate was higher than the Maori.

Maori first admissions spent on the average twice as long in hospital but for readmissions the European average stay was longer. The Maori readmission rate (12.4 per cent) was twice as high as the European rate (6.0 per cent).

East Cape with 38.7 per 10,000 population and Hawke's Bay with 30.6 per 10,000 population had the highest Maori rates while Wanganui with 13.3 per 10,000 population had the lowest Maori rate.

## 6.26 Diseases of buccal cavity and oesophagus (I.C.D. Nos. 530-539)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	27	146	8.0	5.6	207
5 - 14	26	162	5.3	3.5	243
15 - 24	65	625	21.9	19.9	689
25 - 44	58	535	15.9	9.4	903
45 - 64	13	215	8.1	4.8	359
65 & over	2	173	8.0	8.4	164
Total	191	1,856	11.4	8.3	2,565
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	3.9	5.8	94.8		
Europeans	4.6	9.2	92.2		

Sixtythree per cent of the Maori cases in this title were diagnosed as dental caries. The age-adjusted rate for Maoris was 38.2 per cent higher than the European rate.

Bay of Plenty with 33.6 per 10,000 population and Hawke's Bay with 25.7 per 10,000 population had very high rates, whereas Auckland with 5.2, Wellington with 4.7 and Waikato with 3.8 (all per 10,000 population) had very low rates.

## 6.27 Diseases of stomach and duodenum (I.C.D. Nos. 540-545)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	3	43	0.9	1.7	23
5 - 14	1	28	0.2	0.6	9
15 - 24	13	121	4.4	3.8	138
25 - 44	30	614	8.2	10.8	466
45 - 64	28	1,016	17.4	22.9	771
65 & over	10	692	39.8	33.7	817
Total	85	2,514	5.1	11.2	2,224
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	Europeans			
	16.1	21.1	89.4		
	20.4	20.3	90.2		

The crude rate was twice as high for Europeans as for Maoris but when adjusted for age the European hospitalization rate was reduced to 11.5 per cent higher than the Maori rate.

Included under this heading are ulcers of stomach and duodenum, gastritis and functional disorders of stomach. For ulcers of stomach and duodenum there were 63 Maori cases and 2,127 European cases of which over 95 per cent were aged 25 years and over. The rates were 10.7 per 10,000 population aged 25 years and over for Maoris, and 16.8 per 10,000 population aged 25 years and over for Europeans. Perforation was reported in 6.3 per cent of Maori cases of ulcer and 13.0 per cent of European cases of ulcer.

The age-specific rates for both Maoris and Europeans increased as ages increased, the highest rates being for 65 years and over.

The average stay was four days longer for European first admissions than for Maori first admissions although the Maori stay for readmissions was slightly higher than that for Europeans. There was little difference in the readmission rates.

Regions with high hospitalization rates were rural: East Cape with 9.0 per 10,000 population, and Northland and Taranaki each with 7.9. The two urban regions were below the New Zealand average of 5.1. The Wellington rate was 3.2 and the Auckland rate 2.4.

## 6.28 Appendicitis (I.C.D. Nos. 550-553)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	12	125	3.6	4.8	93
5 - 14	185	1,841	38.1	40.2	1,746
15 - 24	241	1,952	81.2	62.0	2,554
25 - 44	136	1,182	37.2	20.8	2,113
45 - 64	34	337	21.1	7.6	935
65 & over	2	142	8.0	6.9	164
Total	610	5,579	36.5	24.8	7,605
	Average stay in days		Percentage of first admissions		
	First admissions	Readmissions	in all admissions		
Maoris	11.2	11.0	96.1		
Europeans	9.6	7.9	93.5		

The expected number of Maoris was 36.2 per cent higher than the observed European figure. The percentage of acute appendicitis cases in which peritonitis was mentioned was 18.7 per cent for Maoris and 13.6 per cent for Europeans.

The age-specific rates for Maoris were a little lower than those for Europeans in ages below 15 years but higher for all ages above 15 years. For both Maoris and Europeans the highest rate was for 15 - 24 years: 81.2 per 10,000 for Maoris and 62.0 per 10,000 for Europeans. The order in which the age-groups were ranked was the same for both Maoris and Europeans.

The average stay of 11.2 days for Maori first admissions was higher by 1.6 days than for European first admissions. The difference for readmissions was more marked, 11.0 days for Maoris and 7.9 days for Europeans. Readmission was a little more frequent for Europeans than for Maoris.

Regions with high hospitalization rates were Hawke's Bay 47.9 per 10,000 and Taranaki 44.1 per 10,000 while East Cape 27.6 per 10,000, and South Island 14.0 per 10,000 had the lowest rates.

## 6.29 Hernia of abdominal cavity (I.C.D. Nos. 560-561)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	154	704	45.8	27.2	1,184
5 - 14	63	290	13.0	6.3	596
15 - 24	47	235	15.8	7.5	497
25 - 44	62	1,052	17.0	18.5	966
45 - 64	57	1,416	35.4	31.9	1,569
65 & over	10	844	39.8	41.1	817
Total	393	4,541	23.5	20.2	5,629
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	11.9	11.9	94.9		
Maoris	11.9	11.9	94.9		
Europeans	10.7	9.9	92.0		

There was not much difference between the crude rates for Maoris (23.5 per 10,000 population) and Europeans (20.2 per 10,000 population), but when the expected and observed values were compared the Maori figure was 24.0 per cent higher than the European figure. Intestinal obstruction was specified in 9.2 per cent of the European hernia cases but in 17.8 per cent of the Maori cases. The percentage of inguinal hernias was 80.2 per cent for Maoris and 68.7 per cent for Europeans.

The age-specific rates for Maoris aged under 25 years were considerably higher than those for Europeans, but there was little difference between the two at ages above 25 years.

The average stay for Maori first admissions was 11.9 days and for European first admissions it was 10.7 days. For readmissions the average stay was 11.9 days for Maoris and 9.9 days for Europeans. The European readmission rate was higher than that for Maoris.

Regions with high hospitalization rates were Taranaki 36.2 per 10,000 and Hawke's Bay 30.6 per 10,000. South Island 19.6 per 10,000, Wellington 19.0 per 10,000, and Bay of Plenty 16.0 per 10,000 had the lowest rates.

## 6.30 Other diseases of intestines and peritoneum (I.C.D. Nos. 570-578)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	315	735	93.6	28.4	2,419
5 - 14	59	316	12.1	6.9	554
15 - 24	56	506	18.9	16.1	595
25 - 44	71	788	19.4	13.9	1,102
45 - 64	55	859	34.2	19.4	1,516
65 & over	27	871	107.6	42.4	2,209
Total	583	4,075	34.9	18.1	8,395
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	12.8	13.1	95.4		
Europeans	13.8	23.6	90.8		

The three leading diagnoses for Maoris in this title were gastro-enteritis with 358 cases or 61.4 per cent, intestinal obstruction with 69 cases and abscess of anal and rectal region with 60 cases. Together they accounted for 83.5 per cent of the cases assigned to this heading. Although there were 267 European cases of ulcerative colitis only one Maori case was reported.

The age-adjusted rate for Maoris was twice as high (106.0 per cent) as that for Europeans. In patients aged under five years the Maori rate was more than three times as high as the European rate.

The average stay for Maori and European first admissions was about the same but for readmissions the European stay was twice as long. The readmission rate for Europeans was double that for Maoris.

East Cape with 43.5 per 10,000 population and Bay of Plenty with 43.3 per 10,000 population had high rates, while South Island with 14.0 per 10,000 population was low.

## 6.31 Diseases of liver, gallbladder and pancreas (I.C.D. Nos. 580-587)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	4	11	1.2	0.4	31
5 - 14	-	20	-	0.4	-
15 - 24	15	184	5.1	5.8	160
25 - 44	59	936	16.1	16.5	914
45 - 64	45	1,171	28.0	26.4	1,241
65 & over	7	831	27.9	40.5	573
Total	130	3,153	7.8	14.0	2,919
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	16.6	12.3	93.1		
Europeans	17.6	17.4	90.2		

The crude rate for Europeans was nearly twice as high as that for Maoris but the age-adjusted rate showed the European rate as only 7.4 per cent higher than the Maori rate.

There were 55 Maori cases of cholelithiasis and 39 cases of cholecystitis and cholangitis without mention of calculi. Together they accounted for 72.3 per cent of the Maori cases compared with 83.0 per cent of the European cases assigned to this diagnostic heading.

There was little difference in the average stay for Maori (16.6 days) and European (17.6 days) first admissions but in readmissions the average European stay was five days longer. Readmission was somewhat more frequent in Europeans.

Taranaki (17.3 per 10,000 population) and Hawke's Bay (15.3 per

6.32 Nephritis, nephrosis and other diseases of urinary system  
(I.C.D. Nos. 590-609)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	36	215	10.7	8.3	277
5 - 14	52	377	10.7	8.2	490
15 - 24	56	399	18.9	12.7	595
25 - 44	79	690	21.6	12.1	1,227
45 - 64	66	750	41.0	16.9	1,818
65 & over	11	636	43.8	31.0	899
Total	300	3,067	18.0	13.6	5,306
		Average stay in days First admissions Readmissions		Percentage of first admissions in all admissions	
Maoris		18.8	8.1	93.3	
Europeans		19.9	15.7	85.5	

The age-adjusted Maori rate was 73.0 per cent higher than the European rate. The four leading diagnoses for Maoris were infections of kidneys 107 cases, acute nephritis 56 cases, calculi of kidney and ureter 28 cases and cystitis 27 cases.

The average stay for first admissions was about the same for Maoris and Europeans but for readmissions the average stay for Europeans was nearly twice as long as that for Maoris. The European readmission rate (14.5 per cent) also was twice as high as the Maori rate (6.7 per cent).

High rates were recorded in East Cape 35.0 and Hawke's Bay 27.8, and low rates in Waikato 10.5 and Auckland 10.3. The New Zealand average Maori rate was 18.0 - all rates per 10,000 population.

6.33 Diseases of male genital organs (I.C.D. Nos. 610-617)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	33	543	19.5	41.1	258
5 - 14	9	181	3.6	7.7	84
15 - 24	23	123	15.5	7.7	249
25 - 44	14	153	7.6	5.3	220
45 - 64	20	413	22.1	18.6	491
65 & over	14	1,053	137.8	117.5	1,235
Total	113	2,466	13.3	21.9	2,537
		Average stay in days First admissions Readmissions		Percentage of first admissions in all admissions	
Maoris		12.6	20.4	93.8	
Europeans		15.8	14.1	93.8	

This title included hyperplasia prostate, redundant prepuce and hydrocele. Ritual or preventive circumcision was not included. Of the 113 Maori cases 26 were orchitis and epididymitis, 26 were redundant prepuce and phimosis, and 20 were hyperplasia of prostate.

In spite of a disparity in the crude rates the Maori rate was only 2.9 per cent higher than the European rate when adjusted for age.

The rate for Taranaki at 30.9 per 10,000 male population was more than double the New Zealand Maori average of 13.3 per 10,000 male population, while the rates per 10,000 male population for Auckland at 4.7 and South Island at 2.5 were low.

## 6.34 Diseases of breast and female genital organs (I.C.D. Nos. 620-637)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	5	28	1.5	1.1	39
5 - 14	17	66	3.5	1.4	160
15 - 24	235	1,162	79.1	36.9	2,488
25 - 44	320	3,745	87.6	65.9	4,976
45 - 64	86	2,334	53.5	52.6	2,372
65 & over	7	476	27.9	23.2	573
Total	670	7,811	40.1	34.7	10,608
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	7.6	9.1	95.5		
Europeans	8.4	10.6	95.2		

Although disorders of menstruation made up just over a third of the cases in both Maoris and Europeans there were different hospitalization patterns for the other leading diagnoses. Fourteen per cent of Maoris and two per cent of Europeans were cases of acute mastitis not associated with lactation, ten per cent of Maoris and two per cent of Europeans were acute salpingitis cases, five per cent of Maoris and ten per cent of Europeans were cervicitis cases, and three per cent of Maoris and twenty per cent of Europeans were uterovaginal prolapse cases.

The Maori age-adjusted rate was 35.8 per cent higher than that for Europeans. The biggest difference between Maoris and Europeans was for ages 15 to 24 years where the Maori rate was 79.1 per 10,000 population and the European rate was 36.9 per 10,000 population.

Wide fluctuations were not found in the regional rates which ranged from 31.8 per 10,000 population to 47.2 per 10,000 population.

## 6.35 Complications of pregnancy (I.C.D. Nos. 640-648)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	-	-	-	-	-
5 - 14	1	2	0.4	0.1	9
15 - 24	142	1,093	95.9	70.9	1,478
25 - 44	148	1,670	81.2	60.0	2,262
45 - 64	4	19	5.7	0.9	126
65 & over	-	-	-	-	-
Total	295	2,784	35.9	24.9	3,875
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	10.4	8.3	96.6		
Europeans	10.5	10.3	94.7		

The age-adjusted Maori rate was 39.2 per cent higher than the European rate. Included in the 295 Maori cases were 77 threatened abortion cases, 42 ectopic pregnancy cases and 32 pre-eclampsia of toxæmia cases.

Regions with the highest rates were Wellington with 74.8, Auckland with 52.4 and Waikato with 46.1, while Bay of Plenty with 19.5, East Cape with 19.2 and South Island with 19.0 had low rates. (All rates per 10,000 female population).

## 6.36 Abortion (I.C.D. Nos. 650-652)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	-	-	-	-	-
5 - 14	-	1	-	..	-
15 - 24	196	1,561	132.4	101.3	2,040
25 - 44	256	3,019	140.4	108.4	3,911
45 - 64	7	39	10.0	1.8	221
65 & over	-	-	-	-	-
Total	459	4,620	55.9	41.3	6,172
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	Europeans	96.1		
Europeans	4.0	4.4	95.3		

The Maori age-adjusted rate was 33.6 per cent higher than the European rate. There were three therapeutic abortions and 17 septic abortions reported for Maoris.

The Wellington region rate was highest at 84.2 per 10,000 female population, followed by Hawke's Bay at 76.1 per 10,000 female population. Taranaki with 41.7, Northland with 37.8 and South Island with 34.9 had the lowest rates. (All rates per 10,000 female population).

## 6.37 Delivery and complications of puerperium (I.C.D. Nos. 660-689)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	-	-	-	-	-
5 - 14	-	-	-	-	-
15 - 24	155	813	104.7	52.8	1,613
25 - 44	138	1,203	75.7	43.2	2,108
45 - 64	2	7	2.8	0.3	62
65 & over	-	-	-	-	-
Total	295	2,023	35.9	18.1	3,783
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	Europeans	96.9		
Europeans	9.6	9.9	93.2		
	10.1	7.8			

Two thirds of the cases in this group were deliveries and one third complications of puerperium. Of the deliveries 20.3 per cent of the Maoris and 37.8 per cent of the Europeans were caesarean sections. The Maori age-adjusted rate was 87.0 per cent higher than the European rate.

The New Zealand average hospitalization rate for Maoris was 35.9 per 10,000 females. Two regions had very high rates. Wellington was by far the highest with 177.7 per 10,000 females. In the 57 Wellington cases were 38 normal maternity cases admitted to Wellington Hospital. Reference was made to the clinical files and in each case it was shown that the patients had not booked into a maternity hospital but had presented themselves at the casualty department after the onset of labour. Because no maternity beds were available at the time the patients occupied general beds. Even when the normal maternity cases were removed the Wellington rate at 59.2 per 10,000 females remained well above the New Zealand average. The other region with a high rate was Auckland with 76.3 per 10,000 females. It is possible that the circumstances causing the high Wellington rate also applied here.

## 6.38 Diseases of skin and cellular tissue (I.C.D. Nos. 690-716)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	460	707	136.7	27.4	3,533
5 - 14	239	730	49.2	15.9	2,255
15 - 24	109	858	36.7	27.3	1,155
25 - 44	106	911	29.0	16.0	1,647
45 - 64	40	710	24.9	16.0	1,104
65 & over	15	474	59.8	23.1	1,228
Total	969	4,390	58.0	19.5	10,922
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	15.3	38.4	94.2		
Europeans	13.0	21.8	90.8		

The Maori hospitalization rate was two and a half times higher (148.8 per cent) than the European rate. By far the highest age-specific rate was 136.7 per 10,000 for Maoris aged under 5 years. Most of the Maori cases were diagnosed as cellulitis. They numbered 624 or 64.4 per cent of the total cases in this group. They were also 86 eczema cases.

Europeans were readmitted more frequently than Maoris but the average stay for Maori readmissions was 16 days longer than that for Europeans.

High regional rates per 10,000 population were recorded for Hawke's Bay 103.4, East Cape 87.0 and Bay of Plenty 79.6, while Wellington 39.5, South Island 25.2 and Auckland 21.4 had low rates.

## 6.39 Arthritis and rheumatism (I.C.D. Nos. 720-727)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	6	42	1.8	1.6	47
5 - 14	34	138	7.0	3.0	321
15 - 24	21	124	7.1	3.9	223
25 - 44	27	386	7.4	6.8	420
45 - 64	32	855	19.9	19.3	882
65 & over	12	788	47.8	38.4	981
Total	132	2,333	7.9	10.4	2,874
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	32.9	32.0	87.9		
Europeans	48.8	70.1	81.1		

Included in the 132 Maori cases were 30 cases of acute arthritis due to pyogenic organisms, 22 cases of unspecified rheumatism, 21 cases of osteo-arthritis and 15 cases of rheumatoid arthritis.

The age-adjusted Maori hospitalization rate was 23.2 per cent higher than the European rate. The age-specific rates for Maoris and Europeans were similar for all ages except between 5 and 24 years where the Maori rates were about double the European rates.

Europeans stayed in hospital longer than Maoris. The average stay for European first admissions was 16 days longer and for readmissions 38 days or more than double the average Maori stay. Readmission was more common in Europeans.

Two regions with high rates per 10,000 population were East Cape with 14.8 and Taranaki with 14.2 while the three with low rates were Wanganui 4.6, Auckland 4.4 and Hawke's Bay 3.8.

6.40 Osteomyelitis and other diseases of musculoskeletal system  
(I.C.D. Nos. 730-749)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	88	320	26.1	12.4	674
5 - 14	208	917	42.8	20.0	1,961
15 - 24	73	976	24.6	31.0	774
25 - 44	80	1,456	21.9	25.6	1,244
45 - 64	35	1,221	21.8	27.5	966
65 & over	1	475	4.0	23.1	82
Total	485	5,365	29.0	23.9	5,701
Maoris	Average stay in days		Percentage of first admissions		
	First admissions    Readmissions		in all admissions		
	40.6	31.6	84.7		
Europeans	20.0	24.8	88.3		

Although the Maori hospitalization rate when adjusted for age was 6.3 per cent higher than the European rate, it was only in ages below 15 years that the Maori age-specific rates were higher than the European rates. The reason for this was plain when the principal diagnoses under the heading were examined. Osteomyelitis and clubfoot which together accounted for more than half the Maori cases were reported more frequently from these age-groups than from any other. On the other hand conditions found usually in older people were infrequently reported for Maoris. For instance, of the 519 cases of hallux valgus only three were Maoris.

The longer average stay for Maoris was mainly due to clubfoot patients who averaged 61 days for each visit to hospital. The higher Maori readmission rate probably reflects the practice of referring patients from district hospitals to base hospitals for surgery.

The transfer of patients to Whangarei for surgery was partly the reason for the high Northland rate of 43.5 per 10,000 population. Hawke's Bay with 40.2 and East Cape with 38.7 also had high rates, whereas Auckland with 18.2 and South Island with 15.4 were low.

## 6.41 Congenital malformations (I.C.D. Nos. 750-759)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	127	1,269	37.7	49.1	974
5 - 14	60	911	12.3	19.9	564
15 - 24	18	230	6.1	7.3	192
25 - 44	10	185	2.7	3.3	153
45 - 64	2	97	1.2	2.2	53
65 & over	1	24	4.0	1.2	82
Total	218	2,716	13.0	12.1	2,018
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	22.4	24.9	78.9		
Europeans	22.0	25.3	78.6		

This title does not include all cases of congenital malformation, those of the musculoskeletal system such as flat foot and club foot being included under diseases of the musculoskeletal system. For Maoris there were 68 cases of congenital malformation of the circulatory system, and 32 cases of undescended testicle.

The Maori hospitalization rate when adjusted for age was 34.6 per cent below the European rate. European age-specific rates were generally higher particularly for ages under 5 years.

The average stay of first admissions and readmissions and the readmission rate itself were practically the same for Maoris and Europeans.

Wellington with 17.4 per 10,000 population and East Cape with 17.0 per 10,000 population had high rates while Hawke's Bay with 9.6 per 10,000 population and South Island with 5.6 per 10,000 population had low rates.

## 6.42 Certain diseases of early infancy (I.C.D. Nos. 760-776)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	194	1,588	57.6	61.5	1,488
5 - 14	-	10	-	0.2	-
15 - 24	-	1	-	..	-
25 - 44	-	-	-	-	-
45 - 64	-	-	-	-	-
65 & over	-	-	-	-	-
Total	194	1,599	11.6	7.1	1,488
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	22.3	10.0	99.5		
Europeans	16.0	12.6	97.7		

Fifty-three per cent of the Maoris and 45 per cent of the Europeans in this group were in hospital because of either immaturity or nutritional maladjustment. Other conditions reported in Maoris were birth injuries 14 cases, pneumonia of newborn 13 cases and haemolytic disease of newborn 11 cases. The 11 Europeans aged over four years were old cases of congenital torticollis. The Maori age-adjusted rate was 6.9 per cent below the European rate.

Maori first admissions had an average stay six days longer than Europeans.

Auckland had the highest hospitalization rate for Maoris (19.4 per 10,000 population) while low rates per 10,000 population were recorded for South Island 7.0, East Cape 6.4, Taranaki 6.3, and Bay of Plenty 5.9.

## 6.43 Symptoms, senility and ill-defined conditions (I.C.D. Nos 780-795)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	121	744	36.0	28.8	930
5 - 14	180	1,513	37.0	33.0	1,696
15 - 24	267	1,880	89.9	59.8	2,828
25 - 44	183	2,094	50.1	36.9	2,846
45 - 64	84	1,776	52.2	40.1	2,314
65 & over	58	2,165	231.1	105.4	4,745
Total	893	10,172	53.4	45.3	15,359
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
	Maoris	Europeans			
	9.4	14.7	96.0		
	23.1	29.9	95.2		

The principal condition assigned to this heading was abdominal pain. It was reported in 4,020 European cases and 409 Maori cases. The next two most frequently reported conditions in Maoris were pyrexia of unknown origin (79 cases) and convulsions (53 cases).

The Maori age-adjusted rate was half as big again (51.0 per cent) as the European rate. The Maori age-specific rates were bigger than the European rates at all ages, but the biggest difference was for ages 65 years and over where the Maori rate at 231.1 per 10,000 population was more than double the European rate of 105.4 per 10,000 population.

The average stay of Europeans was much longer than that of Maoris, the 281 patients with senility, who died after being hospitalized for an average of 382.6 days, making the most substantial contribution to the aggregate days stay.

Three regions had high rates and three had low rates per 10,000 Maori population. They were Northland 86.9, Hawke's Bay 71.8, East Cape 70.5, South Island 36.5, Wanganui 35.8 and Auckland 35.7.

## 6.44 Fractures (I.C.D. Nos. N800-N829)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	134	569	39.8	22.0	1,029
5 - 14	424	2,222	87.2	48.5	3,996
15 - 24	181	1,511	61.0	48.0	1,919
25 - 44	166	1,396	45.4	24.6	2,579
45 - 64	71	1,372	44.1	30.9	1,955
65 & over	26	1,849	103.6	90.1	2,127
Total	1,002	8,919	60.0	39.7	13,605
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	17.3	25.5	91.1		
Europeans	23.3	43.9	90.7		

Not only was the age-adjusted hospitalization rate for Maoris 52.5 per cent higher than that for Europeans, but the Maori rates were higher for every age-group. The four leading sites for Maoris were radius and ulna 277 cases, tibia and fibula 167 cases, humerus 124 cases and face bones 71 cases.

The average stay of Europeans was 6 days longer for first admissions and 18 days longer for readmissions, although there was practically no difference in the readmission rates for Maoris and Europeans. The principal factor in the longer stay of European cases was probably the long stay associated with fractured femur in the elderly.

Regions with high rates were East Cape 90.7 per 10,000 population, Northland with 79.5 per 10,000 population, and Taranaki with 77.2 per 10,000 population. Low rates were recorded for South Island 33.7 per 10,000 population and Auckland 28.5 per 10,000 population.

## 6.45 Head injury (excluding skull fracture) I.C.D. Nos. N850-N856)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	68	390	20.2	15.1	522
5 - 14	113	844	23.2	18.4	1,063
15 - 24	208	1,614	70.1	51.3	2,205
25 - 44	119	861	32.6	15.2	1,852
45 - 64	30	535	18.7	12.1	829
65 & over	6	269	23.9	13.1	491
Total	544	4,513	32.6	20.1	6,962
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	5.1	7.7	98.3		
Europeans	5.1	23.6	98.4		

The age-adjusted Maori hospitalization rate was 54.3 per cent higher than the European rate while the Maori age-specific rates were higher at each age-group than the corresponding European rates. Concussion accounted for 433 or 79.0 per cent of the Maori cases, and 82.0 per cent of the European cases.

The average stay for first admissions was the same for Maoris and Europeans but for readmissions the European stay was three times longer.

Most regions had hospitalization rates close to the New Zealand Maori average of 32.6 per 10,000 population. The two exceptions were Wellington with the high rate of 60.6 per 10,000 population and Taranaki with the low rate of 22.1 per 10,000 population.

## 6.46 Open wounds (I.C.D. Nos. N870-N908)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	131	531	38.9	20.5	1,005
5 - 14	239	903	49.2	19.7	2,255
15 - 24	176	881	59.3	28.0	1,866
25 - 44	168	1,035	46.0	18.2	2,613
45 - 64	39	590	24.2	13.3	1,073
65 & over	3	138	12.0	6.7	246
Total	756	4,078	45.2	18.1	9,058
Average stay in days			Percentage of first admissions in all admissions		
First admissions			Readmissions		
Maoris	11.4	10.9	95.1		
Europeans	8.1	8.4	92.7		

The Maori hospitalization rate, after adjustment for age was 122.1 per cent higher than the European rate. This disparity was reflected in all age-groups where the Maori rates were generally twice as high as the European rates.

The average stay for Maoris was two to three days longer than for Europeans for both first admissions and readmissions, but readmission was more common in Europeans.

The New Zealand Maori average hospitalization rate was 45.2 per 10,000 population. Bay of Plenty 79.0 per 10,000 population and Northland 62.9 per 10,000 population had high rates and Auckland with 15.1 per 10,000 population a particularly low rate.

## 6.47 Burns (I.C.D. Nos. N940-N949)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	161	706	47.8	27.3	1,235
5 - 14	62	221	12.8	4.8	587
15 - 24	22	186	7.4	5.9	233
25 - 44	26	195	7.1	3.4	403
45 - 64	11	100	6.8	2.3	301
65 & over	3	50	12.0	2.4	246
Total	285	1,458	17.1	6.5	3,005
Average stay in days			Percentage of first admissions in all admissions		
First admissions			Readmissions		
Maoris	24.4	25.6	96.1		
Europeans	19.9	26.8	94.9		

The age-adjusted rate for Maoris was double (106.1 per cent) the European rate, with higher Maori age-specific rates at all age-groups. Fifty-six per cent of the Maori cases and 48 per cent of the European cases were aged under five years.

The average stay for Maori first admissions was four days longer than the European average stay but there was little difference in either the average stay of readmissions or in the readmission rate.

Hawke's Bay 25.9, Taranaki 23.6, Bay of Plenty 22.4 and East Cape 21.7 had the highest rates per 10,000 population, while Wellington with 12.7 and Auckland with 9.9 per 10,000 population had the lowest rates.

## 6.48 Effects of poisons (I.C.D. Nos. N960-N979)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	126	928	37.4	35.9	966
5 - 14	16	58	3.3	1.3	151
15 - 24	23	159	7.7	5.1	242
25 - 44	18	289	4.9	5.1	278
45 - 64	6	180	3.7	4.1	164
65 & over	2	97	8.0	4.7	164
Total	191	1,711	11.4	7.6	1,965
Average stay in days					
First admissions			Percentage of first admissions in all admissions		
Maoris	3.6	-	100.0		
Europeans	5.6	10.9	98.8		

When adjusted for age the number of Maori cases was 14.8 per cent higher than the European figure. Two thirds of the Maori cases and just over half the European cases were aged under 5 years.

Europeans averaged two days longer in hospital for first admissions, but there were no Maori readmissions following poisoning at all.

Hawke's Bay 23.9 per 10,000 population was twice as high as the New Zealand Maori average of 11.4 per 10,000 population, and Wanganui with 6.6 per 10,000 population had a low rate. Only four cases were reported from Taranaki and two from the South Island.

## 6.49 Other injuries and adverse reactions (I.C.D. Nos. N830-N849; N860-N869; N910-N936; N950-N959 and N980-N999)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	73	412	21.7	15.9	561
5 - 14	145	747	29.8	16.3	1,366
15 - 24	174	1,032	58.6	32.8	1,843
25 - 44	180	986	49.3	17.4	2,800
45 - 64	47	668	29.2	15.1	1,294
65 & over	10	407	39.8	19.8	817
Total	629	4,252	37.6	18.9	8,681
Average stay in days					
First admissions			Percentage of first admissions in all admissions		
Maoris	8.7	20.6	93.6		
Europeans	8.1	14.2	87.2		

This title includes dislocations, sprains, contusions, adverse reactions, superficial and internal injuries, and injuries to nerves. The age-adjusted hospitalization rate for Maoris was twice as high (104.2 per cent) as that for Europeans.

The average stay of first admissions was about the same for Maoris and Europeans but for readmissions the Maori average stay was 6 days longer. On the other hand readmission was more common in Europeans.

Northland had the highest regional rate for Maoris with 62.4 per 10,000 population. The next highest was Hawke's Bay with 45.0 per 10,000 population. Low rates were recorded at Wellington 28.5, South Island 22.4 and Auckland 15.1 - all per 10,000 population.

6.50 Special admissions and examinations without sickness (I.C.D. Nos. Y00-Y18)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	128	562	38.0	21.7	982
5 - 14	15	25	3.1	0.5	142
15 - 24	24	133	8.1	4.2	255
25 - 44	79	499	21.6	8.8	1,227
45 - 64	8	269	5.0	6.1	222
65 & over	3	100	12.0	4.9	246
Total	257	1,588	15.4	7.1	3,074
	Average stay in days		Percentage of first admissions in all admissions		
	First admissions	Readmissions			
Maoris	8.4	22.6	96.5		
Europeans	6.7	11.4	94.1		

This title includes ante-natal care, postpartum observation, boarders and fitting artificial limbs.

When adjusted for age the Maori hospitalization rate was nearly twice as high (93.6 per cent) as the European rate. In only the 45-64 years age-group was the European rate higher than the Maori rate.

Maori readmissions spent twice as long in hospital on the average as European readmissions - 22.6 days compared with 11.4 days.

The highest regional rate for Maoris was recorded for Northland with 29.6 per 10,000 population. Next came Hawke's Bay with 20.1 per 10,000 population. The lowest rates were for Auckland 8.7, Wanganui 8.0 and Wellington 6.3 - all per 10,000 population.

6.51 Motor vehicle accidents (I.C.D. Nos. E810-E835)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	67	283	19.9	11.0	514
5 - 14	110	523	22.6	11.4	1,036
15 - 24	259	1,877	87.2	59.7	2,743
25 - 44	174	1,082	47.6	19.0	2,704
45 - 64	56	773	34.8	17.4	1,543
65 & over	9	396	35.9	19.3	737
Total	675	4,934	40.4	21.9	9,277
Average stay: Maoris 17.6 days, Europeans 14.3 days.					

The cases assigned to this heading included motor vehicle accidents occurring on roads and elsewhere. When adjusted for age the Maori hospitalization rate was 88.0 per cent higher than the European rate. The greatest difference between the Maori and European age-specific rates was for ages 25 to 44 years where the Maori rate was 150 per cent higher, while the least difference between the two was for ages 15 to 24 years where the Maori rate was 46 per cent higher.

There were proportionally more Europeans than Maoris reported as involved in motor vehicle accidents to pedal cyclists and in motor cycle accidents. For Europeans 7.1 per cent were pedal cyclists and 14.9 per cent were motor cyclists while for Maoris 3.4 per cent were pedal cyclists and 11.7 per cent were motor cyclists. The percentage of pedestrians involved was about the same; 13.4 per cent for Europeans and 14.5 per cent for Maoris.

## 6.52 Other transport accidents (I.C.D. Nos. E800-E802, E840-E866)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	23	84	6.8	3.3	176
5 - 14	177	758	36.4	16.5	1,668
15 - 24	45	322	15.2	10.2	478
25 - 44	45	257	12.3	4.5	699
45 - 64	3	165	1.9	3.7	84
65 & over	1	70	4.0	3.4	82
Total	294	1,656	17.6	7.4	3,187

Average stay: Maoris 10.9 days, Europeans 10.3 days.

The age-adjusted Maori rate was nearly twice as high (92.5 per cent) as the European rate.

The leading causes of hospitalization for both Maoris and Europeans were transport accidents involving horses and pedal cycles. Fifty-three per cent of Maoris and 29 per cent of Europeans were injured in horse accidents, while 37 per cent of Maoris and 51 per cent of Europeans were injured in pedal cycle accidents. Sixteen Maori cases were injured in railway accidents, 11 in water transport accidents and one in a tram car accident. No Maoris were hospitalized for injuries in air transport accidents.

## 6.53 Accidental poisoning (I.C.D. Nos. E870-E895)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	128	928	38.0	35.9	982
5 - 14	14	48	2.9	1.0	133
15 - 24	13	63	4.4	2.0	138
25 - 44	12	105	3.3	1.8	187
45 - 64	6	104	3.7	2.3	164
65 & over	-	74	-	3.6	-
Total	173	1,322	10.4	5.9	1,604

Average stay: Maoris 3.6 days, Europeans 3.7 days.

When adjusted for age the hospitalization rate for accidental poisoning was 21.3 per cent higher for Maoris than for Europeans. Seventy-four per cent of the Maori cases and 70 per cent of the European cases were aged under five years, while 95 per cent of both Maori and European cases occurred at home.

Of the 173 Maori cases the substances most frequently mentioned were 50 cases of petroleum products (nearly all of which were kerosene), 18 cases of poisoning by corrosive aromatics, acids and caustic alkalis, and 15 cases of poisoning by barbiturates.

## 6.54 Accidental falls (I.C.D. Nos. E900-E904)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	131	669	38.9	25.9	1,005
5 - 14	314	1,891	64.6	41.3	2,960
15 - 24	96	649	32.3	20.6	1,016
25 - 44	72	765	19.7	13.5	1,119
45 - 64	38	1,016	23.6	22.9	1,046
65 & over	24	1,941	95.6	94.5	1,963
Total	675	6,931	40.4	30.8	9,109

Average stay: Maoris 11.4 days, Europeans 24.0 days.

Although the age-adjusted hospitalization rate for Maoris was 31.4 per cent higher than that for Europeans, the disparity was not evenly distributed through all age-groups. In ages below 45 years the Maori age-specific rates were about 50 per cent higher than those for Europeans but for ages 45 years and over there was very little difference at all between the two.

The average stay of Europeans was more than twice as long as that for Maoris. This was largely due to long periods spent in hospital by elderly people who sustained fractured femurs in falls.

Most falls occurred in the home. In the cases where the place of accident was specified, 58.0 per cent of Maoris and 59.2 per cent of Europeans fell at home.

## 6.55 Other accidents (I.C.D. Nos. E910-E936)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	354	1,462	105.2	56.6	2,719
5 - 14	388	1,754	79.8	38.3	3,657
15 - 24	336	2,167	113.2	68.9	3,561
25 - 44	323	2,033	88.4	35.8	5,021
45 - 64	89	1,157	55.3	26.1	2,451
65 & over	14	296	55.8	14.4	1,146
Total	1,504	8,869	90.0	39.5	18,555

Average stay: Maoris 12.9 days, Europeans 10.7 days.

The 1,504 Maori cases in this group comprised 42.2 per cent of all Maoris admitted as the result of injury or adverse reaction. When adjusted for age, the Maori hospitalization rate was more than double (109.2 per cent) the European rate.

The five leading causes for Maoris were 386 cases of injury by sharp objects such as glass, metal and hand tools, 219 cases of injury by machinery (including 74 cases at home, 65 industrial cases and 56 cases on the farm), 210 cases of burns by hot substances, corrosive liquids and steam, 129 cases of injury by falling objects, and 60 cases of injury by fire and explosion of combustible materials. Together these five causes accounted for two thirds of all cases in this group.

In 1,314 cases the place of accident was specified. Domestic accidents numbered 665 or 50.6 per cent of the cases, followed by sports accidents 212 cases, industrial accidents 178 cases and farming accidents 126 cases.

6.56 Complications of prophylactic and therapeutic procedures  
(I.C.D. Nos. E940-E959)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	11	94	3.3	3.6	85
5 - 14	15	252	3.1	5.5	142
15 - 24	25	263	8.4	8.4	264
25 - 44	29	401	7.9	7.1	449
45 - 64	19	366	11.8	8.3	523
65 & over	5	296	19.9	14.4	409
Total	104	1,672	6.2	7.4	1,872

Average stay: Maoris 19.6 days, Europeans 18.0 days.

Included in the 104 Maori cases were six complications of prophylactic procedures. Of the 98 remaining cases 77 were therapeutic misadventures in surgical treatment. When adjusted for age the Maori hospitalization rate was higher than the European rate by 12.0 per cent. The age-specific rates for Maoris and Europeans aged 15 to 24 years was the same. Below this age-group the European rates were higher, while above this age-group the Maori rates were higher.

6.57 Late effects of injury and poisoning (I.C.D. Nos. E960-E965)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	1	27	0.3	1.0	8
5 - 14	8	67	1.6	1.5	73
15 - 24	13	129	4.4	4.1	138
25 - 44	13	140	3.6	2.5	204
45 - 64	5	71	3.1	1.6	137
65 & over	1	31	4.0	1.5	82
Total	41	465	2.5	2.1	642

Average stay: Maoris 33.6 days, Europeans 27.0 days.

The cases assigned to this heading were reported as late effects of injuries or were stated to have been injured twelve months or longer before admission to hospital. The age-adjusted hospitalization rate for Maoris was 38.1 per cent higher than that for Europeans.

## 6.58 Suicide and self-inflicted injury (I.C.D. Nos. E970-E979)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	-	-	-	-	-
5 - 14	1	-	0.2	-	9
15 - 24	16	114	5.4	3.6	170
25 - 44	9	227	2.5	4.0	142
45 - 64	2	117	1.2	2.6	53
65 & over	-	42	-	2.0	-
Total	28	500	1.7	2.2	374

Average stay: Maoris 7.7 days, Europeans 12.6 days.

Although the age-adjusted hospitalization rate for Maoris was 25.2 per cent lower than that for Europeans, the age-specific rate for Maoris aged 15 to 24 years was higher than that for either Maoris or Europeans at other ages.

In the 28 Maori cases, which included 17 females, were 18 cases of poisoning by drugs or other solid or liquid substances, four cases of injury by firearms, three cases of injury by cutting and piercing instruments and one case of coal gas poisoning.

## 6.59 Assault and injury purposely inflicted by other persons (I.C.D. Nos. E980-E985)

Ages	Numbers		Rates		Expected number of Maoris
	Maoris	Europeans	Maoris	Europeans	
0 - 4	1	7	0.3	0.3	8
5 - 14	1	8	0.2	0.2	9
15 - 24	15	104	5.1	3.3	160
25 - 44	34	140	9.3	2.5	528
45 - 64	6	52	3.7	1.2	164
65 & over	-	11	-	0.5	-
Total	57	322	3.4	1.4	869

Average stay: Maoris 5.6 days, Europeans 6.7 days.

The age-adjusted hospitalization rate for Maoris was 169.9 per cent higher than that for Europeans, most cases occurring in the 25 to 44 years age-group.

## APPENDIX A

## REGIONAL DISTRIBUTION OF MAORI CASES

## NUMBERS AND RATES PER 10,000 POPULATION LIVING IN EACH REGION

I.C.D. NOS.	DIAGNOSTIC GROUP	Northland	Auckland	Waikato	Bay of Plenty	East Cape	Hawke's Bay	Taranaki	Wanganui	Wellington	South Island	New Zealand Maori Total
001-019	Tuberculosis, all forms	No. Rate 118 54.6	138 54.7	141 37.9	49 26.2	60 31.8	41 39.3	36 56.7	73 48.4	26 41.1	41 57.5	723 43.3
020-138	Infective and parasitic diseases except tuberculosis	No. Rate 90 41.6	56 22.2	116 31.2	91 48.6	98 52.0	81 77.6	22 34.7	21 13.9	20 31.6	9 12.6	604 36.1
140-205	Malignant neoplasm	No. Rate 46 21.3	40 15.9	52 14.0	13 6.9	46 24.4	12 11.5	19 29.9	26 17.2	10 15.8	17 23.8	281 16.8
210-239	Nonmalignant neoplasm	No. Rate 25 11.6	25 9.9	40 10.8	14 7.5	37 19.6	16 15.3	5 7.9	14 9.3	11 17.4	9 12.6	196 11.7
240-245	Allergic disorders	No. Rate 18 8.3	18 7.1	23 6.2	12 6.4	32 17.0	18 17.2	8 12.6	16 10.6	3 4.7	-	148 8.9
250-254	Diseases of thyroid gland	No. Rate 7 3.2	5 2.0	10 2.7	7 3.7	14 7.4	3 2.9	-	5 3.3	3 4.7	-	54 3.2
260	Diabetes mellitus	No. Rate 28 12.9	11 4.4	24 6.5	26 13.9	30 15.9	14 13.4	5 7.9	12 8.0	-	1 1.4	151 9.0
270-289	Diseases of other endocrine glands and metabolic diseases	No. Rate 15 6.9	6 2.4	14 3.8	10 5.3	22 11.7	10 9.6	5 7.9	13 8.6	-	1 1.4	96 5.7
290-299	Diseases of blood and blood- forming organs	No. Rate 4 1.8	4 1.6	9 2.4	9 4.8	15 8.0	4 3.8	2 3.2	5 3.3	5 7.9	1 1.4	58 3.5
300-309	Psychosis	No. Rate 3 1.4	6 2.4	3 0.8	-	9 4.8	15 14.4	2 3.2	5 3.3	12 19.0	3 4.2	58 3.5
310-326	Psychoneurotic, character, per- sonality and intelligence disorders	No. Rate 7 3.2	13 5.2	15 4.0	6 3.2	18 9.5	12 11.5	3 4.7	7 4.6	22 34.8	2 2.8	105 6.3
330-334	Vascular lesions affecting central nervous system	No. Rate 17 7.9	11 4.4	22 5.9	9 4.8	19 10.1	3 2.9	6 9.5	15 9.9	10 15.8	4 5.6	116 6.9
340-369	Other diseases of central nervous system, nerves and peripheral ganglia	No. Rate 29 13.4	21 8.3	41 11.0	32 17.1	24 12.7	19 18.2	44 69.3	26 17.2	8 12.7	7 9.8	251 15.0

I.C.D. NOS.	DIAGNOSTIC GROUP	Northland	Auckland	Waikato	Bay of Plenty	East Cape	Hawke's Bay	Taranaki	Wanganui	Wellington	South Island	New Zealand Island Total
370-389	Diseases of eye	No. Rate 43 19.9	34 13.5	88 23.7	40 21.4	25 13.3	15 14.4	8 12.6	20 13.3	16 25.3	2 2.8	291 17.4
390-398	Diseases of ear and mastoid process	No. Rate 64 29.6	51 20.2	58 15.6	38 20.3	25 13.3	34 32.6	11 17.3	14 9.3	5 7.9	9 12.6	309 18.5
400-416	Rheumatic fever and chronic rheumatic heart disease	No. Rate 62 28.7	33 13.1	81 21.8	47 25.1	89 47.2	17 16.3	12 18.9	43 28.5	5 7.9	3 4.2	392 23.5
420-422	Arteriosclerotic and degenerative heart disease	No. Rate 6 2.8	8 3.2	22 5.9	9 4.8	19 10.1	17 16.3	3 4.7	11 7.3	7 11.1	3 4.2	105 6.3
430-447	Hypertensive and other diseases of heart	No. Rate 33 15.3	19 7.5	82 22.1	29 15.5	71 37.7	26 24.9	24 37.8	22 14.6	3 4.7	4 5.6	313 18.7
450-456	Diseases of arteries	No. Rate 7 3.2	1 0.4	2 0.5	7 3.7	3 1.6	2 1.9	2 3.2	- -	- -	- -	24 1.4
460-468	Diseases of veins and other diseases of circulatory system	No. Rate 43 19.9	17 6.7	71 19.1	49 26.2	55 29.2	30 28.7	24 37.8	23 15.2	16 25.3	18 25.2	346 20.7
470-483	Acute upper respiratory infections and influenza	No. Rate 25 11.6	55 21.8	30 8.1	36 19.2	32 17.0	28 26.8	11 17.3	31 20.5	4 6.3	4 5.6	256 15.3
490-493	Pneumonia	No. Rate 292 135.0	129 51.1	401 107.9	226 120.7	255 135.2	173 165.7	70 110.3	229 151.7	47 74.3	24 33.7	1,846 110.5
500-502	Bronchitis	No. Rate 105 48.6	31 12.3	123 33.1	81 43.3	96 50.9	68 65.1	43 67.7	62 41.1	28 44.3	24 33.7	661 39.6
510	Hypertrophy of tonsils and adenoids	No. Rate 37 17.1	27 10.7	65 17.5	29 15.5	51 27.0	36 34.5	16 25.2	52 34.5	13 20.6	15 21.0	341 20.4
511-527	Other diseases of respiratory system	No. Rate 54 25.0	53 21.0	61 16.4	48 25.6	73 38.7	32 30.6	10 15.8	20 13.3	11 17.4	18 25.2	380 22.7
530-539	Diseases of buccal cavity and oesophagus	No. Rate 17 7.9	13 5.2	14 3.8	63 33.6	28 14.8	27 25.7	5 7.9	15 9.9	3 4.7	6 8.4	191 11.4
540-545	Diseases of stomach and duodenum	No. Rate 17 7.9	6 2.4	14 3.8	10 5.3	17 9.0	5 4.8	5 7.9	6 4.0	2 3.2	3 4.2	85 5.1

I.C.D. NOS.	DIAGNOSTIC GROUP	Northland	Auckland	Waikato	Bay of Plenty	East Cape	Hawke's Bay	Taranaki	Wanganui	Wellington	South Island	New Zealand Maori Total	
550-553	Appendicitis	No. Rate	89 41.2	84 33.3	147 39.6	72 38.4	52 27.6	50 47.9	28 44.1	53 35.1	25 39.5	10 14.0	610 36.5
560-561	Hernia of abdominal cavity	No. Rate	52 24.0	56 22.2	103 27.7	30 16.0	40 21.2	32 30.6	23 36.2	31 20.5	12 19.0	14 19.6	393 23.5
570-578	Other diseases of intestines and peritoneum	No. Rate	66 30.5	66 26.2	146 39.3	81 43.3	82 43.5	40 38.3	19 29.9	53 35.1	20 31.6	10 14.0	583 34.9
580-587	Diseases of liver, gallbladder and pancreas	No. Rate	10 4.6	22 8.7	23 6.2	10 5.3	10 5.3	16 15.3	11 17.3	15 9.9	4 6.3	9 12.6	130 7.8
590-609	Diseases of urinary system	No. Rate	48 22.2	26 10.3	39 10.5	40 21.4	66 35.0	29 27.8	11 17.3	21 13.9	9 14.2	11 15.4	300 18.0
610-617	Diseases of male genital organs	No. (1) Rate	18 16.7	6 4.7	27 14.1	8 8.4	18 19.0	9 17.4	10 30.9	13 16.7	3 9.6	1 2.5	113 13.3
620-637	Diseases of breast and female genital organs	No. Rate	87 40.2	86 34.1	169 45.5	87 46.5	89 47.2	34 32.6	22 34.7	48 31.8	24 38.0	24 33.7	670 40.1
640-648	Complications of pregnancy	No. (2) Rate	34 31.3	66 52.4	83 46.1	18 19.5	18 19.2	16 30.4	10 32.1	20 27.4	24 74.8	6 19.0	295 35.9
650-652	Abortion	No. (2) Rate	41 37.8	75 59.6	107 59.4	49 53.1	57 60.8	40 76.1	13 41.7	39 53.5	27 84.2	11 34.9	459 55.9
660-689	Delivery and complications of the puerperium	No. (2) Rate	26 24.0	96 76.3	40 22.2	14 15.2	22 23.5	14 26.6	11 35.3	9 12.3	57 177.7	6 19.0	295 35.9
690-716	Diseases of skin and cellular tissue	No. Rate	136 62.9	54 21.4	193 51.9	149 79.6	164 87.0	108 103.4	39 61.4	83 55.0	25 39.5	18 25.2	969 58.0
720-727	Arthritis and rheumatism except rheumatic fever	No. Rate	16 7.4	11 4.4	28 7.5	17 9.1	28 14.8	4 3.8	9 14.2	7 4.6	6 9.5	6 8.4	132 7.9
730-749	Osteomyelitis and other diseases of musculoskeletal system	No. Rate	94 43.5	46 18.2	98 26.4	55 29.4	73 38.7	42 40.2	15 23.6	32 21.2	19 30.1	11 15.4	485 29.0
750-759	Congenital malformations	No. Rate	25 11.6	40 15.9	46 12.4	23 12.3	32 17.0	10 9.6	7 11.0	20 13.3	11 17.4	4 5.6	218 13.0

I.C.D. NOS.	DIAGNOSTIC GROUP	Northland	Auckland	Waikato	Bay of Plenty	East Cape	Hawke's Bay	Tairāhiki	Wanganui	Wellington	South Island	New Zealand Maori Total
760-776	Certain diseases of early infancy	No. 27 Rate 12.5	49 19.4	51 13.7	11 5.9	12 6.4	10 9.6	4 6.3	18 11.9	7 11.1	5 7.0	194 11.6
780-795	Symptoms, senility and ill- defined conditions	No. 188 Rate 86.9	90 35.7	173 46.6	88 47.0	133 70.5	75 71.8	35 55.1	54 35.8	31 49.0	26 36.5	893 53.4
N800-829	Fractures	No. 172 Rate 79.5	72 28.5	191 51.4	134 71.6	171 90.7	66 63.2	49 77.2	92 61.0	31 49.0	24 33.7	1,002 60.0
N850-856	Head injury except fracture	No. 62 Rate 28.7	89 35.3	120 32.3	55 29.4	58 30.8	37 35.4	14 22.1	51 33.8	38 60.1	20 28.0	544 32.6
N870-908	Open wounds	No. 136 Rate 62.9	38 15.1	137 36.9	148 79.0	101 53.6	43 41.2	27 42.5	70 46.4	31 49.0	25 35.1	756 45.2
N940-949	Burns	No. 34 Rate 15.7	25 9.9	57 15.3	42 22.4	41 21.7	27 25.9	15 23.6	26 17.2	8 12.7	10 14.0	285 17.1
N960-979	Effects of poisons	No. 23 Rate 10.6	23 9.1	45 12.1	24 12.8	23 12.2	25 23.9	4 6.3	10 6.6	12 19.0	2 2.8	191 11.4
-	Other injuries and adverse reactions	No. 135 Rate 62.4	38 15.1	120 32.3	80 42.7	82 43.5	47 45.0	27 42.5	66 43.7	18 28.5	16 22.4	629 37.6
Y00-Y18	Special admissions without sickness	No. 64 Rate 29.6	22 8.7	56 15.1	27 14.4	33 17.5	21 20.1	9 14.2	12 8.0	4 6.3	9 12.6	257 15.4
	Total	No. 2,795 Rate 1292.5	2,011 797.1	3,821 1028.2	2,252 1202.5	2,668 1414.9	1,553 1487.3	813 1280.9	1,629 1079.5	736 1164.2	506 709.5	18,784 1125.2

(1) Rates per 10,000 male population.  
(2) Rates per 10,000 female population.

ACKNOWLEDGEMENT

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REFERENCES

1. ROSE, R.J. "Maori-European standards of health"  
Special Report Series No.1.  
Medical Statistics Branch, 1960.
2. PRIOR, I. "A health survey in a rural Maori  
community, with particular emphasis  
on the cardiovascular, nutritional  
and metabolic findings" -  
New Zealand Medical Journal, July 1962.
3. FOSTER, F.H. "Maori patients in mental hospitals" -  
Special Report Series No.8.  
Medical Statistics Branch, 1962.
4. ROSE, R.J. "Infant and foetal loss in New Zealand" -  
Special Report Series No.17.  
Medical Statistics Branch, 1964.

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